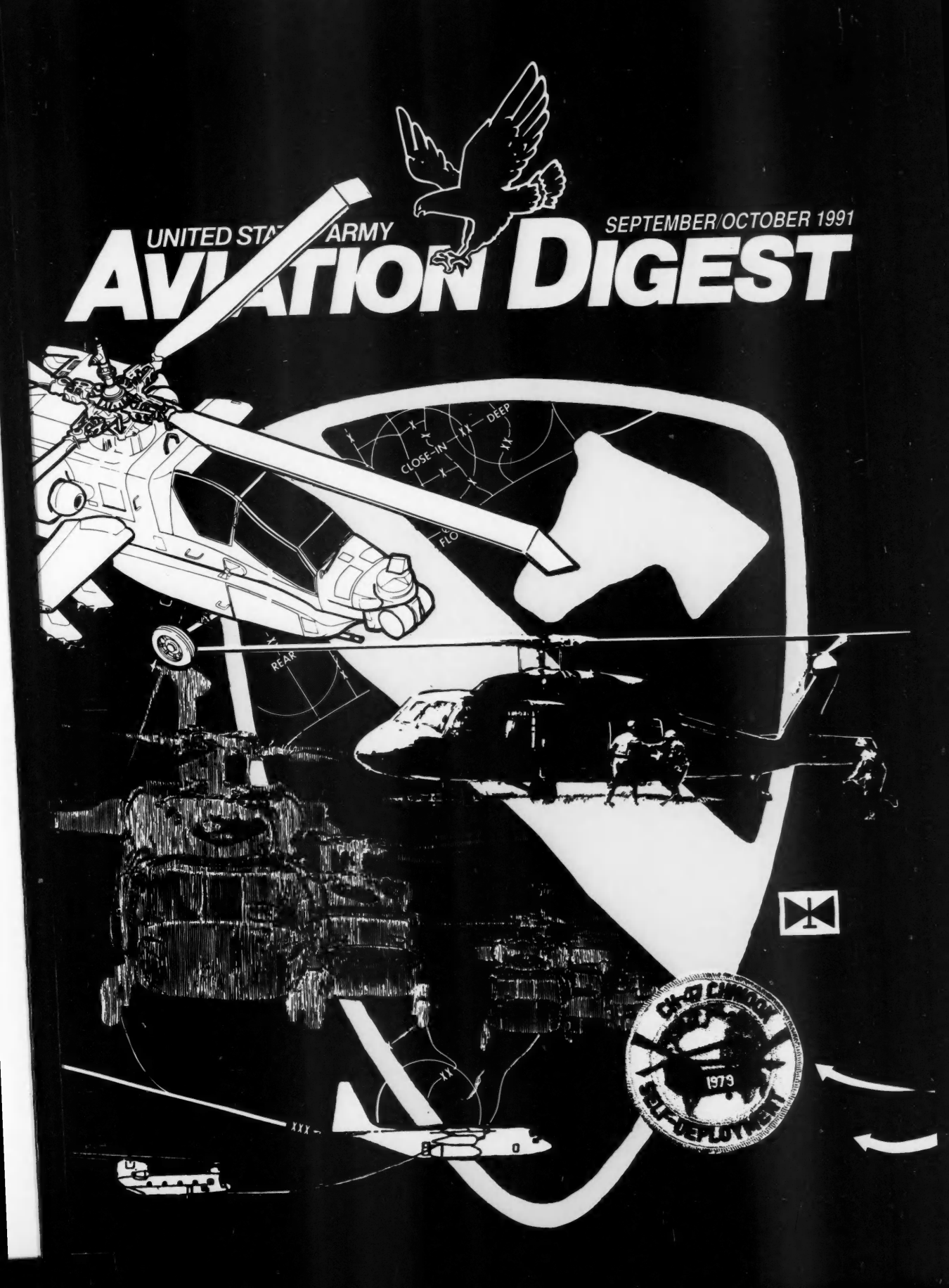
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AVIATION DIGEST

PROFESSIONAL BULLETIN

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Cover: **Studies conducted by the Army Tactical Mobility Requirements (Howze) Board, formed in 1962, proved that helicopters could provide the mobility and lethality needed to increase combat effectiveness of ground forces. As a result of the Board's recommendation, the 11th Air Assault Division (Test), later designated the 1st Cavalry Division (Airmobile), was organized. In the lead article, "Design for Tempo, Part 3: Aviation—Mobility and Lethality for Deployable Forces," the authors emphasize, nearly 30 years later, that the time for another Howze Board is now!**

Major General Dave Robinson
Commander, U.S Army Aviation Center

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Fred Martin, Art Director

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Major General Dave Robinson
Chief, Army Aviation Branch

The Physics of Deployment

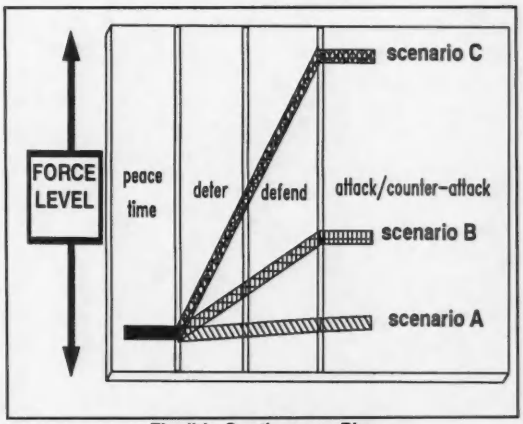
While the competent commander may inspire soldiers to amazing feats of courage and endurance, many battlefield functions are controlled by laws of physics. Time, space, and a host of mechanical phenomena defy violation of physical laws. The challenges of deploying a contingency force, conducting the battle, and the calculus of sustainment respond, at least in part, to certain physical laws. The next few years will see major changes to our Army's mission and force structure. As the Army reduces in size, and tailors its structure to accomplish contingency missions around the world, we must keep the 'physics of war' in mind.

A contingency mission requires the movement of soldiers and materiel over distance to achieve a national goal. The 'physics of war' impacts heavily upon the ability to perform contingency missions, and requires us to take a number of things into consideration when designing the total force. Strategic transportation assets are limited. National strategic lift assets are not adequate to lift a complete contingency force, or even a substantial part of it, at one time. Some weapons systems are easier to transport than others. Some weapons are lethal across the spectrum of conflict through low-, medium-, and high-intensity warfare, while others are effective in only one part of this spectrum. The Army knows which weapons work well, how many of each weapon systems fit into each type of aircraft or ship, how many strategic-lift aircraft and ships we have, and how long they take to reach their destination. As long as we know the physics of the problem, optimal solutions may be derived to achieve a desired effect. Debate must take second place to facts.

Our national military strategy rests on three basic elements: forward presence of forces; rapid power projection; and force reconstitution. Inherent in this strategy is the capability to carry out flexible deterrent options—to rapidly project power sufficient to be perceived by a potential adversary as credible. Each situation will be different. Some potential foes may 'up the ante' by gradual increments, allowing time for political solutions. Other situations may demand immediate, substantial, and *credible* response. The key to this game is to determine and then deploy the appropriate deterrent in time, for the best war is no war at all.

The physics of war does not significantly impede the slow, gradual deployment of forces into a contingency scenario. The challenge is the rapid deployment of a *credible* force in time to be a deterrent. This is the situation where the 'physics of war' provides calculable limits to our capability. Quite clearly, the scenario that dramatically reveals our limitations is also the most dangerous—where the early deploying portions of the contingency force are terribly important in establishing the credible deterrent capability.

The challenge is to accelerate the deployment of lethal force into the contingency scenario. 'Scenario A,' in the diagram below, doesn't really require a large deployed force in order to deter. The mere political event of a limited deployment may be enough to achieve the national goal. 'Scenario C,' on the other hand, is a worst case example where considerable forces are required merely to deter the aggressor.



Flexible Contingency Plan

continued on page 19

Captain Kevin B. Smith
Special Staff Assistant
Aviation Planning Group

Colonel Patrick J. Bodelson
Chief of Staff
U.S. Army Aviation Center
Fort Rucker, AL

Captain Paul G. Ebhardt
Project Officer
Directorate of Combat
Developments

PART 3: Aviation—Mobility and Lethality for Deployable Forces

This article is the third in a series on design and the warfighting capability of a force. The story addresses the needs of a deployable Army, some possible solutions, and the need for a high-level review of force design, similar to the Howze Board.

On 19 April 1962, Secretary of Defense (SECDEF) Robert McNamara sent a now famous memorandum to the Secretary of the Army. It was the SECDEF's considered opinion that the Army's approach to reconfiguring for "modern war" was overly conservative. He felt the opportunity existed, but had not been fully explored, for technology to break the traditional ties to surface mobility by the use of air vehicles operating close to the ground.

The SECDEF supposed a quantum increase in effectiveness in both mobility and deployability was available and important. He stated that the Army needed a bold "new look" at land warfare mobility and directed a re-examination of the tactical mobility requirements of the Army divorced from traditional viewpoints, past policies, and "dilution, veto, or staff review."[1]

The SECDEF ordered the Army to conduct the Howze Board. The goal of the Board's evaluation was to achieve maximum attainable mobility in the combat area. The SECDEF directed the Board to present their results in terms of cost and transport effectiveness. He stated, "I shall be disappointed if the Army's re-examination merely produces logically oriented recommendations to procure more of the same, rather than a plan for employment of fresh and perhaps unorthodox concepts which will give us a significant increase in mobility."

The panel selected individuals, for the Board, known for their farsightedness and gave them amazing latitude and unlimited support. Entire units were diverted for testing, and the U.S. Air Force and Navy were directed to cooperate with the Board's requests. Some 3,200 military and 90 civilians took part.

The most significant major activity of the Board was to investigate, test, and evaluate organizations, operations, and concepts associated with airmobility. The Board made extensive use of field tests, wargames, operational research, and visits to overseas combat theaters, all of which were integrated into the final report.

The principle effort was given to field experiments to compare a conventionally equipped force with one made airmobile by the substitution of aircraft for ground vehicles. The results of ...(numerous field) exercises clearly indicated that aircraft would greatly enhance effectiveness in both conventional and counterguerrilla actions.

Also, the Board found that a smaller force could achieve the same task in half the time. The final result of the report was an air assault divisional structure of 459 aircraft as opposed to 100 in a standard division. Ground vehicles were reduced from 3,452 to 1,100. Reduction in strategic deployment requirements was substantial.

The air assault division could lift one third of its assault forces at one time with all essential elements of combat power present: recon, maneuver, artillery, communication, and service and support. The distinct feature was the increased use of support aircraft to carry supplies as far forward as possible.[2]

Almost 30 years later, the same issues (below) confront the Army again:

- ☐ How do we redesign units to generate more lethality?
- ☐ Can units be smaller, yet actually more lethal?
- ☐ Can we design units that are veratile enough to fight effectively across the spectrum of conflict?
- ☐ How will we deploy to a remote battlefield, and what is the best way to design a unit that's quick to deploy?
- ☐ How can we accelerate the tempo of combined arms warfare?
- ☐ The primary question, however, is, "Why are we answering these same questions all over again?"

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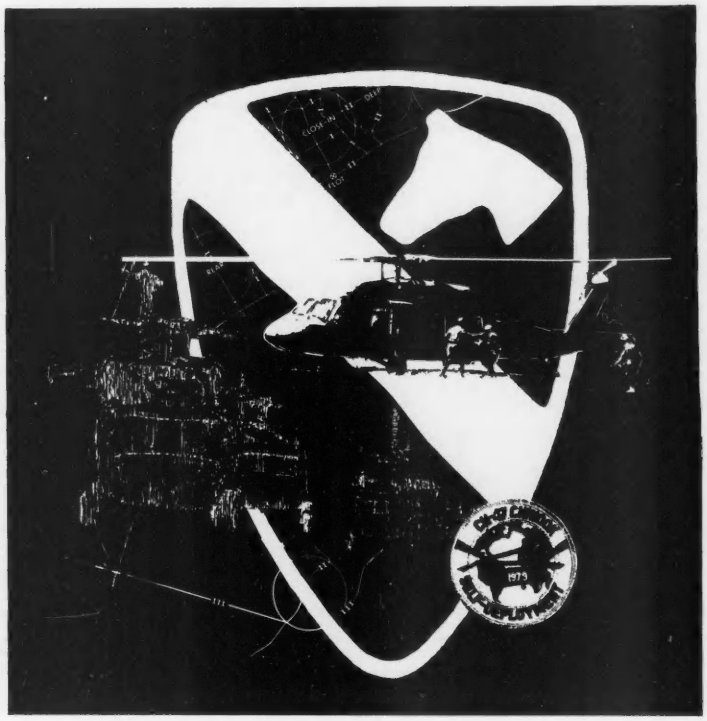

The Howze Board examined tanks, armored personnel carriers, artillery, helicopters, and fixed-wing aircraft in high- and low-intensity scenarios to resolve many of these same issues. We can find significant insights on the difficult questions facing today's force designers from the Howze Board's report.

Now is the time to pull all of the Howze Board volumes off the bookshelf at the library, Fort Leavenworth, KS, dust them off, and relearn the lessons from the largest self-examination the Army has ever conducted.

The Search for Proper Force Design

The primary challenge to today's force designers is simply this: The most strategically deployable forces in our Army are neither mobile, nor especially lethal, once they deploy against a mechanized, mid-intensity foe.

The heavier elements of our Army, while effective in this scenario, would take weeks to reach the troublespot—time enough for a determined enemy to complete its mischief, and occupy or destroy transportation terminals and infrastructure.

How, then, does one go about this business of designing a force that is not only strategically deployable, but strategically meaningful as well? In effect, the whole force-design process must now boil down to what's known as an optimization problem—maximize strategic deployability and battlefield effectiveness across the spectrum of conflict while minimizing the personnel, logistics, and cost associated with the design.

Battlefield Effectiveness

While battlefield effectiveness may be measured in many ways, the generation of tempo is that factor upon which all else turns. Tempo has been called the "soul of war." To find an accepted doctrine or theory that does not call for the generation of higher tempo in relation to your enemy is impossible. A superior tempo is the prerequisite for movement, the ability to concentrate, the ability to generate surprise—the essential ability to conduct either maneuver warfare or rapidly add numbers of lethal systems to the decisive point. We are concerned

primarily with two elements of tempo—the speed with which units can move about the battlefield (unit mobility) and the rate at which they can engage and destroy the enemy (unit lethality).

Unit Mobility

No army in history has ever digressed in tactical mobility. Draft animals and horses have replaced foot movement; trucks and personnel carriers have replaced animals; and aircraft have replaced ships, rail, and wheeled vehicles in many tasks. Fixed-wing aircraft offer significant efficiency in movement of bulk quantity, and special high-priority cargo, from one terminal to another. The search for the best means of unit mobility must begin with a straight-forward analysis of the physical ability to move soldiers as well as materiel about the battlefield.

The exact loading and movement rate data used for our analysis is taken from Field Manual (FM) 101-10-1/2 without modification. This manual shows the UH-60 Black Hawk has a troop-carrying capacity six times that of a 2.5-ton truck over distance.

In the cargo-carrying comparison, the UH-60 was 10 times more effective than the 2.5-ton truck over the same distances. In a practical example of this same effectiveness, UH-60s sold to the Chinese were used to resupply a warehouse (in a border area disputed with India) within 30 days—an operation that normally took 12 months by road.

The CH-47D Chinook provides a major advantage over all forms of wheeled transportation. In the Falklands, one British CH-47 flew 120 hours in 20 days, carrying 773 passengers and 2.2-million pounds of cargo. The triple cargo-hook system and high-lift capability were significant contributors to this amazing feat. If all the data are normalized to the capacity of a 2.5-ton truck, the result is overall relative advantage of air over ground transportation assets (figure 1).

The figure constitutes an abbreviated effectiveness analysis between individual systems. Using these systems to transport an entire unit presents a significantly different problem.

Helicopter systems offer even greater advantage for unit tactical movement as is discussed next.

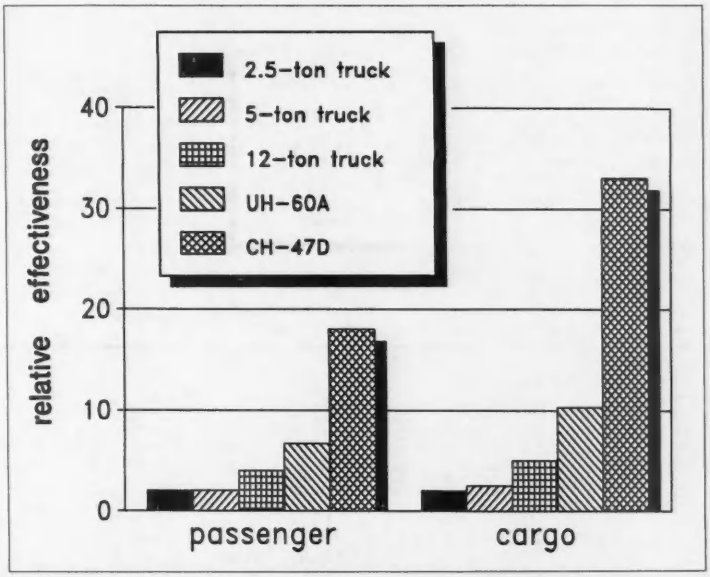

FIGURE 1: Transport effectiveness (normalized to 2.5-ton trucks).

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Unit Mobility in Combat

According to FM 101-10-1/2, a separate, light infantry brigade has a strength of 4,199 soldiers, and consumes 703.6 short tons of supply (all classes) a day in a protracted attack. Using these data, the transportation requirements can be calculated during an operation in which the whole brigade, and its logistics, must move different distances (up to 150 miles) and fight within 10 hours (figure 2). At the longest range, initial analysis indicates the light infantry brigade would use transportation assets that range from 814 2.5-ton trucks to 33 CH-47Ds.

This analysis is based on a 1 to 1 comparison of hauling capability, which bears little resemblance to the actual battlefield advantage of helicopters. During actual operations, ground vehicles normally would travel on a main supply route—814 2.5-ton trucks would not move on 814 separate, parallel routes to the destination. These trucks normally would be traveling in convoy on 1 to 3 separate roads. Military theorists refer to this slowing of ground traffic as the "linear imperative" of surface movement.

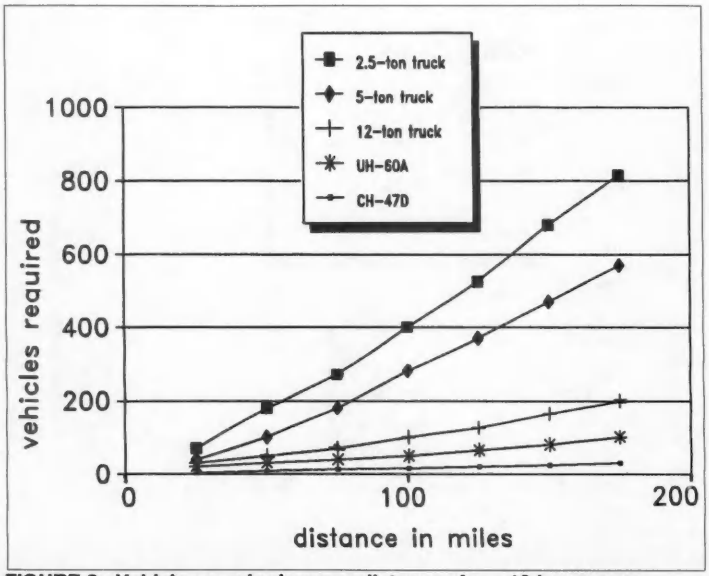

FIGURE 2: Vehicles required versus distances for a 10-hour move.

The Linear Imperative

Brigadier Richard Simpkin describes the linear imperative like this: "The layman sees the movement of mechanized troops as analogous to the trips he makes in his car, with a bit added on for the size and number of vehicles. For columns of vehicles with a substantial pass time (the time the column takes to pass a point), this kind of thinking gives a completely false picture.

"As pass time approaches and then exceeds running time, a totally different picture emerges and the linear imperative really begins to bite. When pass time and running time are equal, the time to complete is twice the running time. Increasing running speed usually leads to disruption of the column by the slower vehicles and a net loss of time.

"Maintaining normal density, let alone increasing it, is a tactical risk when within artillery range or in an adverse air situation. All in all, no variation in technique can do more than nibble at the edges of the linear imperative of surface movement."[3]

Thus, if we assume a 50-meter interval between vehicles in a march column, and a speed of 20 miles per hour, the

time required to complete the movement of this infantry brigade and its logistics increases by an average of at least 33 percent. Thus, even with 814 trucks in support, the infantry brigade is late by hours in each case because of the "linear imperative" of surface movement by columns. Thirty years ago, the Howze Board found that large-scale movements (by helicopter) were normally accomplished in about one third the time of ground moves."[4]

The Future of Mobility

Quantum increases in tracked and wheeled vehicle speed, mobility, or efficiency are not expected in the foreseeable future. The assumption is that the empty-weight to payload ratio and the speed of wheeled vehicles will improve slowly (if at all) over time. Substantial improvements, however, continue in most aspects of aircraft capability. While figure 3 traces the continued technological improvement of carrying capacity to empty weight of cargo helicopters, the figure does not include the recent advances in composite airframe design.

The Howze Board used exactly the same methodology 30 years ago to evaluate battlefield mobility and came up with essentially the same findings. The primary differences in our abbreviated study result from the fact that a 2 1/2-ton cargo truck carries the same load now as it did in 1963, while cargo helicopters have doubled or even tripled their efficiency over the same period. We can draw several important conclusions from this discussion on mobility, three follow:

- ☐ First, and probably most important, is that all helicopters offer substantial mobility differentials and efficiency over all ground vehicles.
- ☐ Second, a fundamental difference exists between the ways that units of helicopters and trucks move. Ground-based rates of movement often are severely restricted by the number of available routes between origin and destination. One hundred trucks cannot

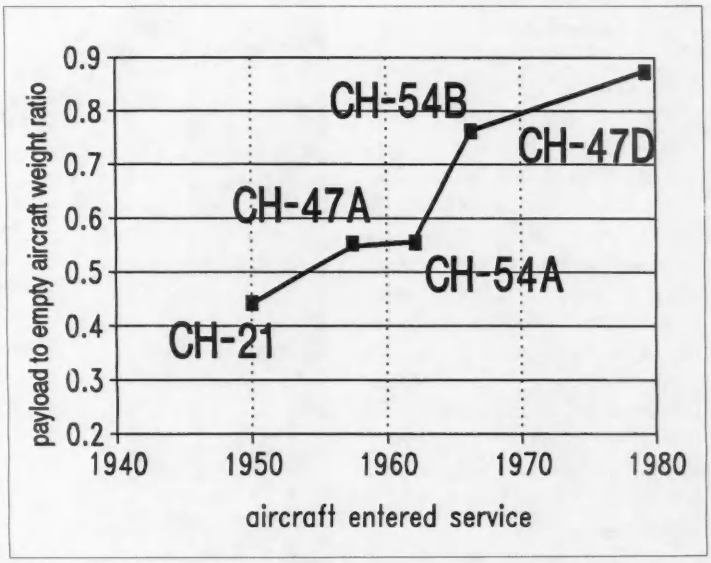

FIGURE 3: Technological improvements over time.

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usually take one hundred routes between the same two points. Helicopters may have restrictions, but this is certainly not one of their restrictions.

- ☐ Last, and perhaps most critical to the future, is the fact that while technology struggles to provide ground transportation with even a fractional increase in efficiency, helicopter performance (to date) regularly enjoys large improvements in performance through the application of new technology.

Unit Lethality

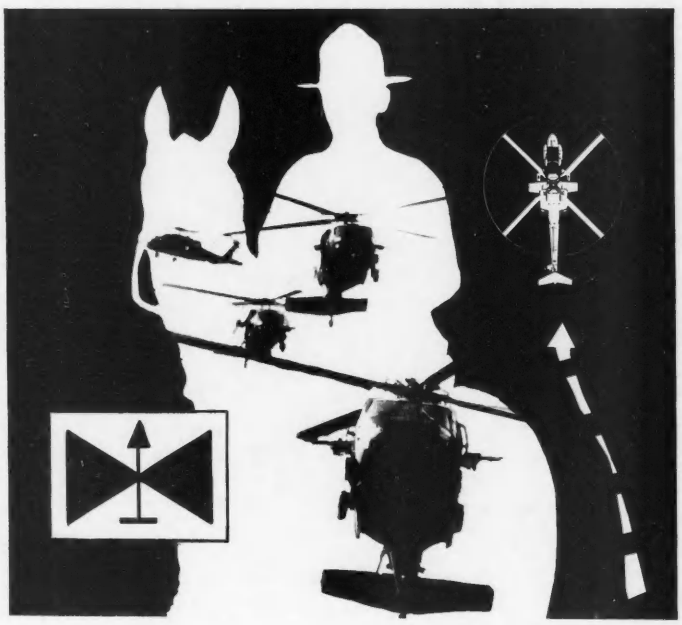
When the Howze Board looked at the lethality of helicopter formations, they found that "...the volume of effective firepower that can be delivered accurately from aerial platforms with speed and surprise gives a shock effect previously associated only with violent armor attacks," [5] and this was in the days of the aerial rocket artillery!

Much has changed since then, and unit lethality needs to be revisited in light of weapons systems like the AH-64 Apache Longbow, RAH-66 Comanche, M-1A1 tank, and the Bradley fighting vehicle.

Indications are strong, however, that the march of technology has given the armed helicopter a substantial lethality margin over ground systems.

Apart from the continuing analysis of Operation Desert Storm (ODS), the most recent analysis of unit lethality comes from the U.S. Army Training and Doctrine Command's (TRADOC's) wargaming of different designs for a deployable, light armored cavalry regiment (ACR).[6] The most demanding scenario for this cavalry regiment analysis (in terms of unit lethality) was, understandably, the guard mission.

Two very important observations emerged from this wargaming effort: The first was that every one of the light cavalry regiment designs out performed the current heavy ACR. The second observation, which impacts most heavily on the discussion at hand, is the lethality of the individual combat systems that were modeled in these wargames. The



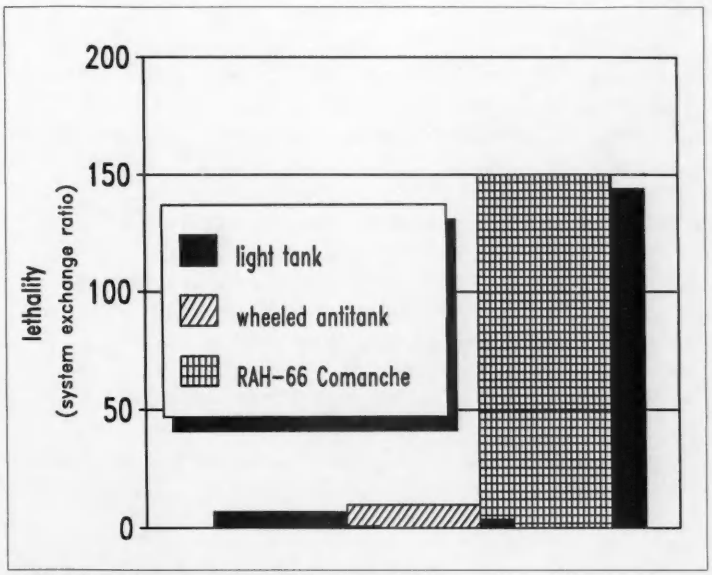


FIGURE 4: Results of TRADOC wargaming.

TRADOC data in figure 4 show at least an entire order-of-magnitude difference between the Comanche and every other combat system modeled in the guard mission.

The system exchange ratio shown in figure 4 is a measure of both lethality and survivability—the ratio of enemy systems destroyed to friendly systems lost. In this case, the RAH-66s in the regiment killed 145 enemy vehicles while losing 1 helicopter to enemy fire. In fact, the RAH-66 was the predominant killer in all the different regimental designs (not just the helicopter-heavy design). Moreover, the helicopter-heavy, RAH-66-equipped cavalry regiment consumed fewer short tons of supplies and required substantially fewer people to field.

Indications are strong, therefore, that not only do armed helicopters have a substantial lethality advantage over "light" ground combat vehicles, but probably over heavier combat systems as well (all of the new ACR designs did better than the current base-case ACR). In addition, the helicopter-heavy force requires fewer people to man it and fewer supplies to operate it. This has important force design implications, as we will see shortly.

Effectiveness Across Levels of Conflict

The 1st Squadron, 9th Cavalry, was the aviation-heavy divisional cavalry squadron of the 1st Cavalry Division in Vietnam. It accounted for over one half of the enemy casualties produced by the entire division. This gives a good indication that helicopter-heavy forces are suited for low-intensity conflicts. The success of helicopters in recent conflicts such as Lebanon, the Falklands, and ODS, as well as extensive TRADOC modeling, indicates that they are extremely effective in mid- and high-intensity conflicts as well. Indeed, no other type of platform can make a similar claim.

Deployability

Recent events (Grenada, Panama, ODS) have clearly defined the need for better strategic deployability. Although light forces are built to arrive sooner and begin the fight with fewer U.S. Air Force sorties, the mobility requirements of a nonlinear battlefield will force light units to take along some means to increase their tempo over that of the boot or truck. The Howze Board found that

the air assault test division was able to compact a normal 7-day deployment schedule into 4 days.

In addition, shipping requirements were reduced an average of 42 percent, and, generally, an air assault division requires 75 percent of the airlift of an airborne division and 50 percent of an infantry division.

The Howze Board also found that self-deployment of aircraft is generally the cheapest and fastest way to move assets. Strategic airlift can move some assets faster, but the bulk of combat power arrives sooner if self-deployed. The current generation of Army aircraft (UH-60, AH-64, CH-47, and RAH-66) are designed with self-deployability in mind. While the decision to self-deploy must be weighed very carefully against the need for maintenance upon arrival, the time and airlift volume gained generally make self-deployment an excellent option.

The Army of the future must be rapidly deployable worldwide. The Army increases its strategic deployability either by designing potent units that are more easily transported by limited U.S. Air Force or Navy assets, or by making units that can self-deploy. While sealift is essential to a protracted campaign, airlift is absolutely critical to success in a short-notice, contingency operation. We must begin to think of how we can "fight a war by C-5 loads,"[7] since the decisionmaker is usually faced with deciding how to get the maximum of combat power rapidly to the troublespot with the available airlift.

Figure 5 shows a rough comparison of the deployment requirements between two different types of combat units—attack helicopters and tanks. (Bear in mind that an armor brigade is roughly equivalent to the base-case ACR discussed earlier in the lethality portion of this article.)

The Howze Board found that airmobile units, when compared to a conventional infantry force, are 200 percent more responsive and 5 times faster to deploy. Figure 5 shows nearly a sevenfold decrease in the number of C-5 sorties required to move large units of helicopters (without self-deployment) as opposed to the sorties required to move a heavy armor unit. This is another part of the Howze Board analysis that has stood the test of time.

Cost

Over a 20-year life cycle, the recurring and nonrecurring costs of different force designs are an important variable.

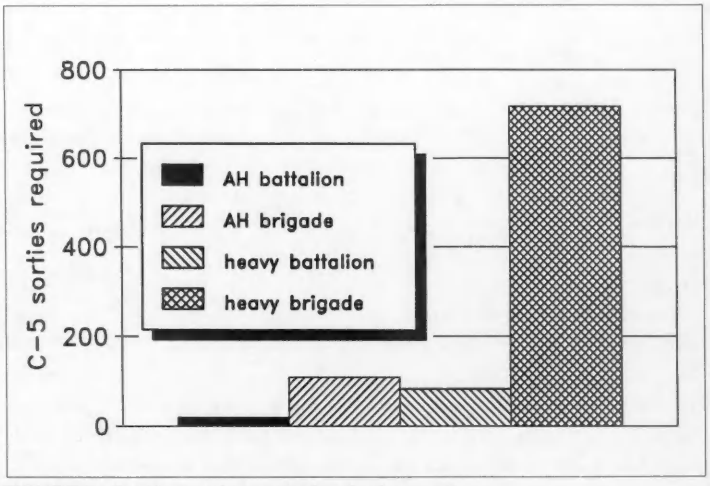


FIGURE 5: Sortie requirements for deployment.

Figure 6 shows that the helicopter-heavy unit (air cavalry ACR) costs 6 percent more than the current ACR.

The Howze Board found that the cost of helicopters probably is offset by the cascading effect of greater efficiency throughout the other battlefield operating systems. Much of the increased cost of aircraft over ground vehicles is offset by the reduced time in transit of supplies, shorter supply lines, and the reduction in depot inventory investment provided by air transport. These savings and those from more rapid movement of casualties and assault forces recover a significant number of man-days, resulting in a smaller overall force requirement. When airlog is used there can be a proportional reduction in the number of ground vehicles and associated personnel required. A reduction in the quantity of engineer assets, such as bridging and construction, required to keep ground supply lines open also can be expected. Significant savings and increased responsiveness are possible when aircraft are self-deployed. This effect can be seen in the above sections on mobility and lethality. The Howze Board analysis, again, remains sound.

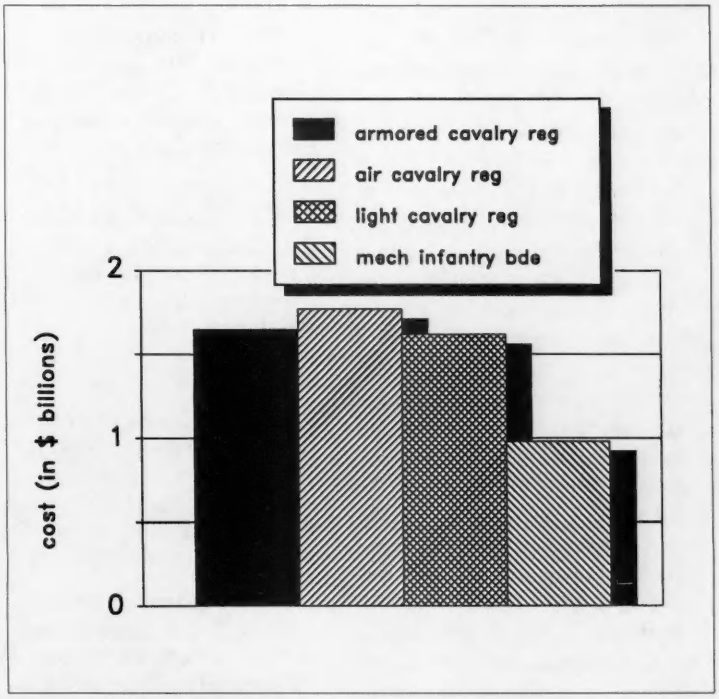


FIGURE 6: Cost comparisons.

Synthesis

Earlier in this article, we made the statement that the whole force-design process must now boil down to what's known as an optimization problem—maximize strategic deployability and battlefield effectiveness across the spectrum of conflict while minimizing the personnel, logistics, and cost associated with the design. What, then, is the best solution to this particular optimization problem?

- ☐ A helicopter-heavy maneuver force is conclusively shown to be much more effective in moving men and materiel around the battlefield than ground-based forms of transportation.

design for tempo

PART 3

- ☐ A helicopter-heavy regiment is much more lethal than ground-heavy designs.
- ☐ A helicopter-heavy unit is much more deployable than a comparable ground unit of the same capability.
- ☐ While helicopters are normally more maintenance-intensive than ground systems, the lethality and mobility advantages allow a helicopter-heavy regiment to be fielded with fewer soldiers, requiring fewer supplies, and costing only marginally more than the current heavy ACR.

In no way do we want to suggest that there is no utility to the synergism of combined arms effect. The main point of contention is that the mix of systems within the combined arms team needs a careful re-evaluation.

Recommendations

We have found many elements of the Howze Board to apply in the 1990s. Many of the same causal factors that eventually resulted in the Howze Board now reappear. Technology offered both new advantages and significant battlefield dilemmas. The force design (then the old pentomic structure) was found lacking. The Army faced a new environment of worldwide "active containment." The Howze Board took all this in and came up with the right answer—a clear work of visionaries. Remember, however, the Army was essentially ordered to conduct the Howze Board by an external office—the SECDEF. He specifically ordered the Army to conduct this re-examination of the tactical mobility requirements of the Army divorced from traditional viewpoints, past policies, and "dilution, veto, or staff review."

ODS has given us the terrifying first glimpse of what the Soviets have often referred to as the "recon-fire complex." The nonlinear battlefield of the future will be characterized by extreme rates of movement over vast differentials of time and space. Slower elements will either be easy prey to advanced precision weaponry, or simply be left behind—unable to contribute. The depth at which decisive engagement can take place is increasing, and the ability to conduct the traditional approach march is diminishing. This phenomenon is becoming more visible with each new deep-fire system and smart weapon that is fielded.

A new set of challenges present themselves. Technology is shifting before our eyes. The Army must become lighter and more deployable. The most mobile, deployable, lethal, and versatile platform in the Army is the helicopter. Indeed, the time is right for another Howze Board.

ENDNOTES

1. The Howze Board was officially known as the U.S. Army Tactical Mobility Requirements Board.

2. Paraphrased from LTG John J. Tolson, "Vietnam Studies," *Airmobility 1961–1971*, Department of the Army, Washington, DC: GPO, 1987, pp. 18-24.

3. Richard E. Simpkin, *Race to the Swift: Thoughts on Twenty-First Century Warfare* (London: Brassey's Defense Publishers, 1985), pp. 119-120.

4. U.S. Army Tactical Mobility Requirements Board, *Final Report, Annex O'Field Tests* (Fort Bragg, NC, 31 July 1962), p. 2.

5. Ibid., p. ii.

6. The light, deployable ACR study is officially known as the "Air, Ground, Motorized Cavalry (AGMC) Study." The AGMC data quoted in this article are from interim products.

7. Richard Diamond, "*Fighting the War by C-5 Loads*," a Martin Marietta concept briefing (Orlando, FL, August 1990).

1-227 Pilots Shot Down, Survive Crash

Specialist Robyn M. Gregory
1st Cavalry Division Public Affairs
Fort Hood, TX

The ***Aviation Digest*** thanks the Public Affairs Officer, 1st Cavalry Division, Fort Hood, TX, and the author for permission to reprint this article.

FEBRUARY 25th was Chief Warrant Officer (CW4) Michael Butler's and Captain (CPT) Michael Klingele's lucky day.

It isn't just any day your AH-64 Apache is shot down by enemy fire and you live to tell about it.

The mission against an Iraqi mechanized company began well enough, but quickly spiraled into what could have spelled death and disaster for two 1st Battalion, 227th Aviation pilots.

"We were in the sector looking from eleven o'clock to the right. Other guys were starting to see targets, but I hadn't yet," recalled CW4 Butler. "I began sweeping back to twelve o'clock when I saw a flash at ten o'clock. I had turned the nose 10 degrees when the missile impacted."

Pilots Shot Down
continued

CPT Klingele, at the time, had his mike keyed, ready to give a command to his Charlie Company Apaches.

"I instantaneously said 'we're hit,' " CPT Klingele remembered. "I saw the crash happening like you would a car crash–you see it coming in slow motion, but the sequence probably only took 2 seconds."

The round, believed by CW4 Butler to be an Iraqi SA-14 surface-to-air missile, impacted behind his seat causing the canopy's plexiglass to explode and pelt the aviators with cuts.

"I saw the ground rolling and pulled pitch. It was a hell of an explosion–we were violently thrown," said CW4 Butler of fighting to maintain control. "We hit hard and it knocked the wind out of us for a second. I looked and saw the captain moving up front."

He said his first thought was "Hey, I'm alive." He then released his seat harness before realizing he was tilted downward, landing on his head.

Outside the Apache, the duo quickly asked each other if he was okay. Behind them CW4 Butler heard machineguns. Their wingmen, CW2 Edward Sanderlin and First Lieutenant (1LT) Robert Johnston, set down instantly as the rest of Company C set up a perimeter of cover fire for rescue of the downed pilots.

"They were out and running towards us before we even set down," said CW2 Sanderlin.

CW4 Butler beat CPT Klingele to the waiting Apache, hooked onto the wing, and signaled he was ready to get out of dangerous area.

"Hooking on went as I expected it to if put into action, just as we planned," said CPT Klingele.

"We joke now about that because the captain is a PT {physical training} fanatic," said CW4 Butler. "You practically have to beat me with a stick to get me to exercise, but for once I beat him running."

The duo flew on the Apache wings about 5 klicks to a safer area where they transferred to OH-58C Scouts.

CW4 Butler credits the rescuing pilots for the lift from danger and has referred to CW2 Sanderlin as his "best buddy" ever since.

"Getting shot at was the easy part. Getting pulled out of there was the hard part. In 20 years' flying, I've never seen professionalism as in this company's fast reaction."

A bloody-faced CW4 Butler transferred to the 1-227th Aviation command and control UH-60 Black Hawk and was taken to the 1-3 Aviation forward arming and refueling point.

With a second run at the sector to do, CPT Klingele commanded his Company C birds from a Scout, while CW4 Butler helped to upload HELLFIRE missiles.

"Those two are incredible for continuing like that–I mean after just getting shot down and all," said 1LT Johnston.

Once at "home," CW4 Butler reflected on his good fortune.

"I felt somehow as if I was being protected on the way down, as if God was intervening in my life," he said. "It is the most incredible thing that has ever happened to me."

February 25th was indeed a lucky day.

Aviation Apprentice Mechanic Program

Sergeant First Class Dennis Cary
U.S. Army Aviation Logistics School
Department of Attack Helicopter Training
Fort Eustis, VA

In these days of force reductions and building down the Army, we all have experienced personnel shortages in our units. Even at full strength, a unit's manpower authorizations leave vacancies in critical areas. As a result, we must work around this problem and fill these vacancies to the best of our ability. We all have tightened our belts, increased our duty times, and accepted increased workloads to accomplish our mission. Overloading senior, experienced personnel with administrative details has left aircraft maintenance to less experienced soldiers. It is no longer unusual to find privates, privates first class, or corporals serving as crewchiefs on our helicopters. However, the training these soldiers have received has not kept up with either the increased challenges of our modern units or the increased mission workload.

It is not unusual to find sections in our aviation maintenance units in which the workload is light, while other sections have a heavy workload. A soldier in the structure and sheetmetal shop may not be as busy as a soldier in the powertrain shop. Ideally, the soldier in the sheetmetal shop should be able to work in the powertrain shop long enough to help them catch up. Unfortunately, this soldier is not trained to work in both shops.

Imagine having a soldier trained in all aspects of Army aviation maintenance. This soldier would be capable of completing a variety of tasks, i.e., fixing a hole in the aircraft sheetmetal, replacing a garlock seal, working on the hydraulic system, and working on armament. This soldier sounds like a super shop's noncommissioned officer (NCO). Just think of the flexibility this would give the aviation unit maintenance (AVUM) company. Take this same soldier, after he's had some experience and becomes an NCO, and make him a crewchief. Imagine the quality of helicopter maintenance. Imagine a flight company with skilled NCO crewchiefs. It sounds like a dream.

Concept

In most civilian occupations, people enter at the apprentice level. This is the level at which they

receive most of their initial training. After working on the job for a few years, the apprentice progresses to the journeyman level. After working a few more years, he reaches the master craftsman level in his chosen field.

Why wouldn't this type of training work for us in Army aviation? Why couldn't an aviation mechanic be able to perform any task, on any aircraft? Why should we limit ourselves to one small portion of our chosen occupational field?

Our civilian counterparts can work on any type of aircraft after they're trained? Are civilian schooling and training better than ours? Not hardly. They document the work and test their apprentices to become licensed airframe and powerplant (A&P) mechanics. Why can't we document our work and train ourselves as they do?

To do this, we must change the way we train and use our soldiers. Upon entry, we must make the soldier an apprentice mechanic. During this period we must give him the time to learn and practice our maintenance craft in a "hands-on" environment. After successfully completing a structured training program, he should be promoted to journeyman level and allowed to practice his skills. After receiving additional technical training, the soldier must be recognized and used as a master mechanic.

Ideally, the Army training will qualify the soldier to take the A&P mechanic examination and become a licensed aviation mechanic. Once this training is complete, we must provide an environment that recognizes, uses, promotes, and retains this highly skilled technician.

The complexity of the equipment, maintenance costs, and the fix-it-forward doctrine of AirLand Battle Operations demand that these technicians be retained in the shop. The current practice of forcing soldiers into platoon sergeant (PSG) and first sergeant (1SG) positions, etc., to be promoted, is self-defeating in today's high-tech climate. These duties actually remove them from practicing hands-on maintenance.

Implementation

A soldier classified as military occupational specialty (MOS) 67A10, aviation apprentice mechanic, will receive 9 weeks of training in all of the shop areas at Fort Eustis, VA. Upon graduation, he will be awarded MOS 67A10. His first assignment will be to an aviation intermediate maintenance (AVIM) company. Here he will continue his training on operational aircraft.

Upon arrival at the AVIM unit, the soldier will be enrolled in a formal training program that will require him to become proficient in most aviation maintenance skills. To assist both the unit commander and the apprentice mechanics with this required training, the U.S. Army Aviation Logistics School has attached a field training detachment (FTD) to the unit.

The FTD has experts in various aviation maintenance disciplines. These experts provide alternative training, maintain the administrative workload of the training program, and provide the commander with recommendations on the disposition of the 67A10 soldiers.

At the AVIM unit, each 67A10 will be assigned to a shop where his performance will be supervised by shop NCOs. The FTD NCOs will document all work the 67A10 performs and all additional training he receives.

While the 67A10 is assigned to the AVIM unit, he will assist in completing all work order requirements. For example, a 67A10 is assigned to a powertrain shop, and the main rotor head on an OH-58C Kiowa needs a tension torsion strap inspection. The 67A10 will assist in removing the main rotor head from the aircraft. He will follow it back to the shop where he will help perform all required maintenance. He will then help reinstall the rotor head and assist in the run-up and test flight.

Once the 67A10 completes 80 percent of the task list for a particular shop and obtains the shop supervisor's recommendation, he will be given a

written competency test by the FTD NCOs. Upon successful completion of the written test, the apprentice must then complete the next shop work order from start to finish. This work includes all associated paperwork. All work must be approved by the unit technical inspector.

The apprentice mechanic is then certified to perform unsupervised maintenance in that shop and moves on to the next shop for training. After certification, he can return to that shop and work unsupervised, if he is needed.

The 67A10 will rotate through the electrical, powertrain, engine, sheetmetal, and armament shops. After the 67A10 is certified in all shops, he will be awarded MOS 67B10. At that time he will be eligible for transfer to an AVUM unit.

There will be no slots in the flight companies for MOSs 67A10 or 67B10. However, the 67B10 can be used for whatever maintenance the AVUM unit needs. This arrangement gives the maintenance officer and unit NCOs more flexibility to manage their people.

Before reenlistment, the 67B10 must be a sergeant (SGT) E5 or above and have attended the primary leadership course. At reenlistment time, the 67B10 must decide, based on the needs of the Army, which MOS in the career management field (CMF) 67 to pursue.

After reenlisting and choosing an MOS, the soldier will attend the basic noncommissioned officer course (BNCOC) at Fort Eustis, VA. After BNCOC, he will receive the necessary training to become a journeyman mechanic and receive a specific MOS. If the soldier chooses a 67-series MOS, he will receive the training needed for crewchiefs and technical inspectors relative to a specific helicopter. He also will become eligible for assignment to a flight company. The rank structure in the flight companies will be increased, thereby providing crewchief slots for SGTs and staff sergeants.

This arrangement will put the experienced mechanics back on the aircraft where everyone in aviation maintenance will benefit. These same crewchiefs will have the training to repair most flight-line damage on their aircraft. For example, if, during preventive maintenance daily, a small hole is found in the tailboom of an aircraft, the crewchief could call the toolroom to get the required tools to fix the hole. The downtime on the aircraft would be drastically reduced.

Should the soldier decide on a 68-series MOS, he will receive technical training on component repair and technical inspector training. He also will receive the training in skills necessary to supervise and train the 67A10s in an AVIM unit. The soldier will be eligible for assignment to an AVUM unit.

Future

The concept for the future has the soldier returning to Fort Eustis, VA, to attend the advanced NCO course. Here he must choose one of two career tracks—remain technically-oriented or become command-oriented?

The first track is for the soldier who wants to be a technical inspector or maintenance manager. This soldier would progress as a sergeant first class, master sergeant, and sergeant major. His assignments would consist of quality control, production control, battalion aviation maintenance office, and other similar jobs.

The second track is command, which would be for leadership-type positions. This individual would progress as PSG, 1SG, and center sergeant major. Once the career track has been chosen, the soldier would be locked into it.

The future of Army aviation is being written today. The reorganization of CMF 67, and the associated training that accompanies it, will help ensure that we meet the increasing challenges of force reductions and building down the Army.

Readers may address matters concerning aviation logistics to: Assistant Commandant, U.S. Arrmy Aviation Logistics School, ATTN: ATSQ-LAC, Fort Eustis, VA 23604-5415.

Laser-guided HELLFIRE Missile

Nat Dell
Public Affairs Officer
TEXCOM Experimentation Center
Fort Hunter Liggett, CA

Crouched behind an embankment at Fort Hunter Liggett, CA, a TOW gunner fires a missile and knocks out an enemy tank. The tank was approaching his position from behind a hill 3.5 kilometers away.

For the average soldier this is normal training. However, this firing took place at the field laboratory of the Test and Experimentation Command (TEXCOM) Experimentation Center (TEC), Fort Hunter Liggett, CA. The gunner never saw the enemy tank. The missile was a ground-launched heliborne laser fire and forget (HELLFIRE) (GLH), not a TOW. TEC was conducting a Force Development Test and Experimentation on the GLH for the U.S. Army Infantry School.

The GLH system has an M988 high mobility, multipurpose wheeled vehicle (HMMWV) equipped with a GLH vehicle adapter kit. The adapter kit consists of the following:

- ☐ a two-rail HELLFIRE launcher,
- ☐ a pedestal for adjusting missile azimuth and elevation,
- ☐ safe and arm systems,
- ☐ a remote launch control panel, and
- ☐ a storage rack for six missiles.

Two additional missiles are carried on the launch rails, providing a combat load of eight HELLFIRE missiles.

The gunners from the 2d Battalion, 27th Regiment, 7th Infantry Division (Light), Fort Ord, CA, formed the GLH friendly (Blue) force. Equipped with M1A1 Abrams tanks, the organic TEC armor company provided the opposing force for the 6-week instrumented force-on-force test.

The laser-guided HELLFIRE missile system has been in the Army's weapons inventory for more than a decade. The system was battle tested in the Persian Gulf operations. It lived up to its reputation as a highly effective air-to-ground weapon system.

Most of the GLH ground launch components also have been tested and are in the Army inventory. However, specific test voids existed in command, control, and communications links and in target acquisition and timelines. Congress directed the Army to conduct an operational assessment to answer the data voids.

According to Major Rich Frank, TEC Team Chief of the GLH test, the data collection examined two key issues. First, can an infantry battalion effectively exercise control over a GLH platoon? Second, can the platoon respond to a call for fire and meet mission requirements while operating in an indirect fire mode?

The TOW gunners received 3 weeks of intensive HELLFIRE training under a program of instruction developed by the Infantry School. Rockwell Missile Systems International, the civilian contractor for the GLH system, conducted the training.

The fire control teams normally would use the powerful Ground Laser Designator (GLD) with the HELLFIRE system. However, for safety, the team used a surrogate low-power eye-safe system, developed by TEC engineers.

On a fully instrumented battlefield, the two forces maneuvered against one another in 42 day and night trials. The TEC test team collected data through a realtime casu-

HELLFIRE missile ground-launched from a high mobility, multipurpose wheeled vehicle

alty assessment scenario. This scenario allowed instant transmission of engagement data to TEC's integrated computer network. The TEC test team collected data on the platoon leader's ability to deploy the HELLFIRE missile teams based on fire mission requests from the battalion operations staff.

The test team measured the HELLFIRE missile team's performance of displacement and acquisition of the enemy targets. The team also measured the times required for the gunners to load and fire the HELLFIRE missiles.

Eye-safe lasers and sensors provided information to the computer on probable hits, kills, and misses. During a live fire demonstration the system's standard GLD was used, and, because of range safety constraints, lock-on-before-launch procedures were used.

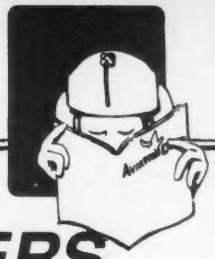
The GLD team "painted" the target with a laser beam and radioed the target information to the fire team. The fire team manually aligned the missile according to the given azimuth and range. The team then retreated to the safety of their remote fire station to fire. During the live fire demonstration the gunners scored six kills in six shots.

The Physics of Deployment, *continued from page 1*

The 'physics of war' require us to plan for each possible contingency mission in terms of reaching a force level required to deter as quickly as possible. While slower-deploying forces will eventually arrive to build a full attack capability, the contingency forces must be ready at a moment's call. Also, the contingency forces must be credible enough to deter a determined foe. How can we best deploy the appropriate contingency force for each foreseeable contingency, and what is Army Aviation's role?

A contingency force must be either rapidly deployable by lift aircraft or self-deployable and transition from peacetime garrison directly into the fight within a matter of hours. A contingency force must be mobile and lethal when it lands—capable of performing its own reconnaissance to sufficient depth, capable of focusing enormous firepower immediately after arrival, capable of applying the synergistic effect of joint and combined arms in order to discourage, disjoint, and destroy the designs of the enemy. Finally, the contingency force must possess weapons that are flexible enough to be used against insurgents in the jungle, a motorized foe in the desert, or against tanks on the European mainland.

What does this mean for Aviation? As an integral part of the combined and joint arms, Aviation offers the ability to very rapidly build a deterrent capability throughout a broad range of scenarios. It can self-deploy, and fight upon arrival. Scout and attack aircraft can recon and secure the lodgement (airfields, port facilities) and transportation networks. As part of a synchronized joint or combined arms action, attack helicopters can focus tremendous combat power at considerable depth. Aviation can rapidly air assault infantry and artillery to critical points on the battlefield. Special electronic mission aircraft can monitor, locate, or jam enemy transmissions during critical early phases of a force entry. Medical evacuation and cargo helicopters provide the links between the deployed force and critical support functions. These are all known capabilities, part of the 'physics' of warfighting. The challenge before us now is to keep the 'physics' of this profession utmost in our minds as we craft training, structure, and doctrine to optimize Aviation's contribution to the combined arms and joint fights. As warfighters, we must now concentrate on providing an endstate capability that is deployable, lethal, and a credible deterrent to those powers that choose to threaten our national interests.



VIEWS FROM READERS

Editor:

As the acting G3 Air Operations Officer for XVIII Airborne Corps during Operations Desert Shield and Desert Storm, I read "Training for Aviators Performing G3 Air Operations and A^2C^2 Duties," by Major Michael Hollis in the May-June 1991 issue of the ***U.S. Army Aviation Digest***, with great interest.

I attended the Battle Staff Course and the Air Operations Noncommissioned Officer Course. Sergeant First Class Mike Scobee is a graduate of the Joint Firepower Control Course. We both had experience supervising A^2C^2 personnel during command post exercises and had written numerous airspace control annexes for plans and orders. The problem is that we both are infantry and we were not prepared for the challenges of A^2C^2 duties in Southwest Asia.

The number of airspace users over the Corps was staggering, and limits placed on U.S. pilots by the Saudi government presented an almost impossible situation for two infantrymen turned A^2C^2 "Gurus." Luckily, the 18th Aviation Brigade Commander, Colonel Robert Seigle, and the Deputy Corps Aviation Officer, Lieutenant Colonel Tommie Brown, came to our rescue.

These two fine officers arranged for augmentation from the air traffic control battalion. By the start of the war, this augmentation consisted of two aviation officers (major and captain) and three 93C noncommissioned officers (master sergeant, sergeant first class, and staff sergeant) who supervised A^2C^2 personnel. This allowed the G3 air section to totally concentrate on the massive tactical airlift movement of forces (a G3 air operations function unique to XVIII Airborne Corps).

Major Hollis is right that A^2C^2 officers need to be specialty 15, and all members of the A^2C^2 element need to be trained. The A^2C^2 is entirely too important to be left to untrained or on-the-job trained people.

As an infantry company commander, I would not want an aviator telling me the best ground route to traverse. Do our Army aviators want an infantryman controlling the airspace?

CPT Jeffrey J. Gudmens, Infantry
Assistant G3 Air Operations Officer
HQ, XVIII Airborne Corps
Fort Bragg, NC

Editor:

What is a CIB? It is a Combat Infantrymen's Badge, correct?

What do jump wings stand for? For people who have been through jump school, correct? With this in mind, why is a person who is not a crewmember of an Army aircraft allowed to wear crewmember wings? I am writing about soldiers with 67 and 68 military occupational specialties (MOSs) who have never crewed.

I recently read a letter from a 93P, Aviation Operations Specialist, wanting to know why he couldn't wear a crewmember badge since he was a part of the Army Aviation community. Enough is enough! True these people are a part of Army Aviation and some work on Army aircraft, but are they crewmembers?

Actual crewmembers put in long, hard hours to make their aircraft flyable. They fly with the aircraft wherever it goes. They are trained not only as mechanics, but as an integral part of the flight operations of the aircraft. They go through a stringent training program geared to teach them in flight operations, emergency procedures, night vision devices operations, systems of the aircraft, and are responsible for maintaining the aircraft records and logbook. I certainly have never seen a 93P do these things.

Let's put badges on the people who earn them, not just because they graduate from one of these MOS-producing schools.

SGT Franz J. Philippe
CH-47D Flight Engineer
2-159th Aviation Regiment
Fort Bragg, NC

Editor:

I would like to address the article, "Aviation's Contribution to the War in the Gulf," written by Major General (MG) Rudolph Ostovich III in the March/April 1991 issue of the ***U.S. Army Aviation Digest.***

The author states in paragraph 6 that "Not a single Apache employed...was lost to hostile enemy

fire." While this statement is true in regard to night flying, it is still a false statement.

Please see the article "1-227 Pilots Shot Down, Survive Crash," taken from the 9 March 1991 issue of the 1st Cavalry Division newspaper, ***CAV Country***.

(name withheld)

Editor's Response:

Thank you for identifying that error. You were right—the author's statement was in reference to AH-64 Apache combat losses at night with special emphasis on the Apache's night vision system. As more information from Desert Storm is received, we will certainly pass it on to our readers. With that in mind—a reprint of the entire article, "1-227 Pilots Shot Down, Survive Crash," provided by the 1st Cavalry Division Public Affairs Office appears on page 13.

Editor:

I am one of those "well-intended" Vietnam-era pilots who transported casualties in "nonmedical evacuation aircraft" whom Lieutenant Colonel (LTC) R. "Huey" Huether takes to task in his "Views from Readers" letter in the May-June 1991 issue of the ***U.S. Army Aviation Digest.*** LTC Huether's letter responded to a previous article, "Armed OH-58D Kiowa Warrior—The Multipurpose Light Helicopter," in the November/December 1990 issue of the ***U.S. Army Aviation Digest.***

His statement that "speed of medical attention and not speed of transport is the key" to a casualty's survival is correct, and in the best of all possible worlds a fully-staffed medical evacuation (MEDEVAC) ship would accompany each combat assault lift into each roaring hot landing zone (LZ). However, when a MEDEVAC ship is not on station (or within a reasonable distance from the casualty), "speed of transport" is the only way to get a wounded trooper "speed of medical attention." If you flew a helicopter in Vietnam, your secondary mission *was* MEDEVAC.

For example, in the Delta of the bad ol' days, an aviation group's worth of combat assaults occurred each day, all day long (and sometimes all night long), with exactly one medical detachment (MedDet) in support. It didn't help that the MedDet's standing operating procedure prohibited flight into a hot LZ unless the MEDEVAC ship was accompanied by AH-1G Cobras, and there was exactly one company of Cobras in all of IV Corps. An LZ in the Delta and a severely wounded troop in that LZ usually achieved "cold" status simultaneously. The problem wasn't endemic to the Delta, it was pandemic throughout the Republic of Vietnam and wherever else we flew. If you were on the ground in Laos, Cambodia, or north of the demilitarized zone and you called for a MEDEVAC ship, what you got was one of us "nonmedical" ships, because we could return ground fire without violating the Geneva Convention, and we were usually the ones who knew right where you were—because we put you there in the first place.

There weren't enough MEDEVAC ships to support everybody on the ground. There were places where MEDEVAC pilots weren't allowed to fly, and there were areas that were over the "Golden Hour's" flight time away from a MedDet base. That's why we "well-intended...nonmedical" pilots flew OH-6A Cayuse and UH-1C/D/H Huey loads of shot-up, blown-up soldiers to evacuation hospitals. Yes, some of them died on the way, but also we saved an awful lot of people who would have died while waiting for a "real MEDEVAC" ship. If anyone considers that a slam at the MEDEVAC pilots, re-read my lead sentence.

This is not a gauntlet thrown at LTC Huether's feet, nor is it a refutation of his entire letter—just a portion of it. Both he and LTC Victor Geiger's "Views from Readers" letter (same issue) raised some valid points that the Army Aviation community must address, and soon.

The June-July 1991 issue of ***Defence Helicopter*** magazine contains an excellent article on the light helicopter experimental (oops, RAH-66). It quotes Colonel Theodore Sendak, Director, Directorate of Combat Developments, Fort Rucker, AL, as saying, "The most broken piece of Army Aviation right now is our reconnaissance." I don't know, but looking back on Vietnam, getting afteraction reports from Central America, seeing pictures from the Persian Gulf, and reading letters from two very unhappy field grade medical service officers, I'd hazard a guess that the most broken piece of Army Aviation right now is our MEDEVAC.

CW4 William S. Tuttle
Instrument Flight Examiner
Avation, New Jersey Army
National Guard

Readers can obtain copies of the material that is printed in any issue by writing to:
Editor, U.S. Army Aviation Digest, ATZQ-APD, Fort Rucker, AL 36362-5042.

AVIATION OPERATIONS UPDATE

Sergeant First Class Michael A. LeBleu
Senior Instructor/Writer
Department of Tactics and Simulation
U.S. Army Aviation Center
Fort Rucker, AL

Periodically, the Doctrine Division (DOCD), Department of Tactics and Simulation (DOTS), evaluates and updates its doctrinal literature priorities. On 6 January 1991, the chief, DOCD, made the decision to place FM 1-300, "Procedures for Flight Operations and Airfield Management," on hold. (The subject matter expert had temporary assignment to Southwest Asia to support Operations Desert Shield/Storm.)

With the cessation of hostilities in the Kuwaiti Theater of Operation, restoration of Kuwait well underway, and redeployment of troops from Southwest Asia in progress, work on FM 1-300 has begun again.

This manual has not yet been released to aviation units for worldwide review. Still, information about aviation unit tactical operations, especially those units supporting Operations Desert Shield/Storm, is solicited for input in this manual. Every level of aviation operations should be concerned about the contents of FM 1-300.

For this manual to meet the needs of field units, send feedback, suggestions, or comments on DA Form 2028 to Commander, USAAVNC, ATTN: ATZQ-DOT-DD, Ft Rucker, AL 36362-5263.

The article, "93P Aviation Operations Specialist," published in the 31 July 1990 issue of the Aviation Digest, mentioned FM 1-300 would change to a training circular. By definition, FM 1-300 will remain a field manual.

The original intent of the Department of Enlisted Training (DOET) was to provide aviation units with a one-source document. This document was to outline all tables of distribution and allowances and tables of organization and equipment (TOE) unit and tactical aspects of flight/tactical operations center operations and airfield management. This unfortunately could not be done because the source material was constantly revised. However, a recent review of reference material used to prepare the preliminary and initial coordinating drafts of FM 1-300 revealed incorrect information had been put in the manual. Part of the problem was outdated information. The most current regulations, manuals, handbooks, and TOE information have since been received and corrections made. The next coordinating draft, scheduled for fielding in the third quarter of fiscal year (FY) 1992, will reflect these changes.

Unit Operations

At present, Chapter 5, "Aviation Unit Operations," is being expanded to include the current aviation personnel authorizations for operations and training officers in TOE units; a draft tactical standing operating procedure; and wartime records and reports requirements. This chapter needed more information about a broader spectrum of tactical operations. Nothing has been published about the responsibilities of aviation operations specialists assigned to higher echelons.

Chapter 7, "Flight Operations," will also be rearranged, placing the automated flight record section ahead of the manual flight record section. This chapter also contains more detailed information and examples about flight record management and computation of enlisted flight pay (DA Form 759-3). Chapter 7 will also provide regulatory procedures about personnel who fail to complete their Aircrew Training Program (ATP) requirements.

Form Change Pending

Three important items affect the contents of chapter 7.

First, the Department of the Army has approved DA Form 2408-12 which will be included as an example in FM 1-300. This form should be fielded within 4 months. DA Pamphlet 738-751 also provides an example of this draft DA Form 2408-12 to include detailed instructions outlining its use.

DA Pamphlet 738-751 includes information on the provision of certified true copies of DA Form 2408-12. This information is for pilots who perform flights in aircraft not assigned to their

unit or activity. The pilot in command (PIC) of the flight will annotate on the DA Form 2408-12 the remark, "I certify this is a true copy of the DA Form 2408-12," and the date of the flight. The PIC will sign below the certification date.

Second, here is information to clearly show how an individual may log combat and imminent danger flight time. According to Army Regulation 95-1, personnel may log combat time when they fly directly against the enemy within a designated combat zone. Imminent danger time may be logged when Imminent Danger Special Pay is authorized according to the Department of Defense (DOD) Pay Manual, Chapter 10, section 11007. For example, during the Persian Gulf War, let's say a UH-60 Black Hawk accompanied a flight of AH-64 Apache aircraft as part of a search and rescue operation into enemy held territory. With a high probability of drawing hostile fire, the aircraft would log combat time.

However, if that same UH-60 made a parts run from Rahfa to King Khalid Military City, the aircraft would log imminent danger time. This is because the probability of drawing hostile fire was highly unlikely and Saudi Arabia was designated an imminent danger area.

Third, here is the concern of tracking imminent danger time for both aviator and nonaviator personnel. The present DA Form 759 series forms do not provide space for tracking imminent danger flight time for aviator and nonaviators. Because of this, users should record information about nonaviator personnel on the lower portion of the remarks section of the DA Form 759-3.

Aviators should annotate the total number of imminent danger hours in the remarks section of DA Form 759 for aviators. Once the new DA Form 759 series becomes available, these hours will be transferred according to instructions in FM 1-300.

Course Changes

News from the schoolhouse indicates the conventional typing course, once a part of the Aviation Operations Specialist Course (AOSC) Program of Instruction (POI), will no longer be taught. The AOSC Branch Chief has stated typing is no longer considered a critical 93P task. Typing was removed from the list of required course subjects by the last critical task selection board.

This means AOSC students no longer need to demonstrate typing proficiency to become fully qualified aviation operations specialists. With the removal of typing from AOSC POI, proper changes to AR 611-201 had to be made about the AOSC prerequisites.

The conventional typing course has now officially been replaced by "keyboard fundamentals." These fundamentals were designed specifically to teach the 93P student computer characteristics and functions, the keyboard itself, and how to input data.

Aviation operations students are now tested on their ability to input data accurately into an existing database, but not on their speed. This process affords students the opportunity to do several things. Students can electronically update a unit database by transferring flight record information on an individual diskette to the computer's hard drive. Once they complete the information transfer and database update, the students can perform several things. They can input data into that individual's file; perform DA Form 759 closeouts; and remove individual names from the unit database. The students transfer individual flight record information from the computer hard drive to a floppy diskette for individuals to take to their next duty station.

Flight Record Automation

Version 2.1 is presently being taught in the AOSC. Still, DES and DOET have been working diligently on providing a computer program to potentially revolutionize the Automated Flight Record System (AFRS). Through their combined efforts, DOES and DOET may have achieved this goal in AFRS version 4.0.

This program, still in the developmental stages, is expected to undergo rigorous testing during late summer or early fall of 1991. AFRS version 4.0 could have a faster internal operations function, incorporated within the program itself. This would occur if the data transfer response time were increased when someone accesses individual data from a unit's database. Rather than waiting for a few seconds for a screen to appear, data transfer will take place almost instantaneously.

Flight records managers will no longer need to manually calculate the number of hours flown for nonaviator pay entitlements. The basic flight pay entitlement computation for nonaviator personnel is the only calculation so far to be incorporated into this newest version of AFRS to date.

AFRS version 4.0 automatically calculates the total number of hours flown for any given month. Then the 4.0 places that total in column "f" of DA Form 759-3. The total will then indicate whether or not the individual is entitled to flight pay for that month.

Computation of entitlement eligibility, using excess and unused hours and still in the developmental stages, will be incorporated in future versions of AFRS. What has yet to be programmed into AFRS is flight pay entitlements based upon the 120-day notice; commander's verification of nonavailability of aircraft; and nonaviator illnesses. Barring any unforeseen circumstances, AFRS version 4.0 is expected to be fielded by December 1991.

Although various software programs have been designed and are now being used by aviation units around the world, the DES AFRS software is the only version authorized for flight record management.

Western Region Survival School

The Western Region Survival School, Portland, OR, has scheduled the following classes for the remainder of 1991:

- ☐ Overwater Survival: 12 to 15 November and 18 to 21 November; 9 to 12 December and 16 to 19 December.

According to Mr. Frank Heyl, director of training, the Survival Instructor Course is the first Western Region Survival School course for Active Army, Army Reserve, and Army National Guard instructors. "These classes offer civilian college credit important for military retention and promotion," he says.

The courses provide survival training for aircrew and nonaircrew personnel. These personnel must participate in regular and frequent flights overwater and on land environments.

Combat aircrew survival training, including these classes, provides training for use of on-board aviation life support equipment. This training also provides practical techniques for survival environment and how to stay alive until rescued.

Field Manual 1-508, page 8-8, provides registration information for users. Users also may call the Western Region Survival School, (503) 636-6254. This school provides training schedule data and student information booklets.

Downed Aircraft is a Survival Resource

Most military flyers carry some type of issued survival equipment to aid them in an emergency. Sometimes when crewmembers become survivors, the items in their possession are all they have. For many others, the aircraft is an available resource that also may have survived the incident. Today's advanced aircraft contain many useful items that have survival uses, with the help of a little imagination. Let's look at a few of the possibilities.

Much of the aircraft's outer skin is useful in a land survival situation. Aluminum is lightweight and transportable and could be used as shelters or signals. Any titanium on the aircraft could be used for cooking or reflecting sunlight. Although not an optimum shelter, the fuselage might be the only shade for miles. The wings can provide wind breaks or even a fire platform.

The aircraft's interior has many more survival resources compared to the exterior. There are countless instruments and other items available for improvising. The compass, clock, and mirrors are just a few of the items that can be used for their intended purposes. Other things such as wiring, hoses, and cloth fabric can be used to make survival items. Aircraft wiring could be used for binding or snaring. Black smoke from burning rubber hoses can be used as a signal. Fabric on the seats, floors, and walls might be used for shelter, clothing, or insulation. The seat belts may become a sling or bandage. Some types of seat fabric can be used to strain the large particles from your water. Seat cushions make excellent pillows and sleeping pads for a good night's sleep.

Flammables can be found throughout the aircraft. Aircraft fuel and hydraulic oil burn easily, as do the seat cushions. Be careful, some seat cushions produce toxic gases when burned. If the aircraft has magnesium wheels, shavings from them can be used as a fire starter. The tires are probably the best black smoke producers when ignited, and almost every aircraft has tires. Hope-

fully, these items weren't destroyed in a fire during impact.

This article only lists a few survival uses for aircraft parts; the possibilities are endless. Next time you go out to fly in your aircraft, see how many parts you might use for survival. Your imagination is your only limitation.

U.S. Coast Guard Helicopter Incident

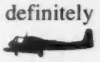
A recent incident off Saint George Island, Alaska, underscores the importance of aircrew training and equipment preparation. The U.S. Coast Guard launched a HH-3F Pelican to evacuate a fishing boat crew from its grounded trawler. The helicopter crew hoisted six survivors from the trawler. While attempting to hoist the seventh survivor, heavy seas caused the hoist cable to snap and recoil into the main rotor blades. The pilot maintained control and evaluated the situation. He decided the crew's best chance to survive was to find a sheltered landing area, as opposed to ditching in an open ocean with 20-knot winds and 15-foot seas.

A rescue C-130 Hercules took over communications and diverted to the nearest island to search for a suitable helicopter landing site. The HH-3F proceeded to the island entertained by a constant, low-frequency vibration, a "whooshing" sound, and pieces of the hoist cable falling from the main rotor. En route, the crew donned survival suits, prepared a seven-person raft, and briefed the passengers on emergency procedures. The nearest available landing area was the top of a cliff. The landing was uneventful and the crew secured the aircraft.

Both the helicopter crew and survivors spent 42 hours on the island, mostly in the aircraft. The boat crew had "Mustang" survival suits and sneakers protecting them from the wind and blowing snow. Several problems arose with survival equipment and some valuable lessons were learned. One rescue crewman had trouble donning his survival suit because of the bulkiness of his cold weather boots.

The standard-issue cold weather gear was inadequate for the severe cold weather encountered on the island. Fortunately, extra gear, air-dropped by the C-130, allowed the crew to double-up and better outfit the passengers. All crewmembers had their personal survival kits.

This incident reinforces a basic survival rule—whatever you have on may be all you have for survival! Now, all Kodiak aircrews are reevaluating their personal survival equipment. All aviation personnel also should reinforce the importance of preparation, proper equipment, procedures, and the wisdom of carrying personal survival kits to our aircrews. This incident definitely supports it.



If you have questions about ALSE or rescue/survival gear, write to AMC Product Management Office, ATTN: AMCPM-ALSE, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798; or call DSN 693-3573 or Commercial 314-263-3573.

U.S. Army Class A Aviation Flight Mishaps

	Number	Flying Hours	Rate	Army Fatalities	Total Cost (in millions)
FY 90 (through 30 September)	31	1,696,871	1.83	33	$ 141.5
FY 91 (through 30 September)	50	1,314,704*	3.80	38	$ 174.8

*estimated

AVIATION MEDICINE REPORT
Office of the Aviation Medicine Consultant

AIR AMBULANCE OF THE FUTURE

Lieutenant Colonel R. (Huey) Huether
Aviation Staff Officer
Materiel and Logistics Systems Division
Directorate of Combat and Doctrine Development
Academy of Health Sciences
Fort Sam Houston, TX

The family of the UH-60 Black Hawk helicopters was recently enlarged, when the mission design series UH-60Q was approved as the new designation for UH-60 Army air ambulances. As the UH-1V Iroquois designated a UH-1 with specialized air ambulance equipment, the UH-60Q will designate a UH-60 as an air ambulance with equipment unique to the aeromedical evacuation mission.

Army aviation continues its modernization with the AH-64 Apache, OH-58D Kiowa, CH-47D Chinook, and RAH-66 Comanche. The Army Medical Department (AMD) is beginning to modernize its air ambulances.

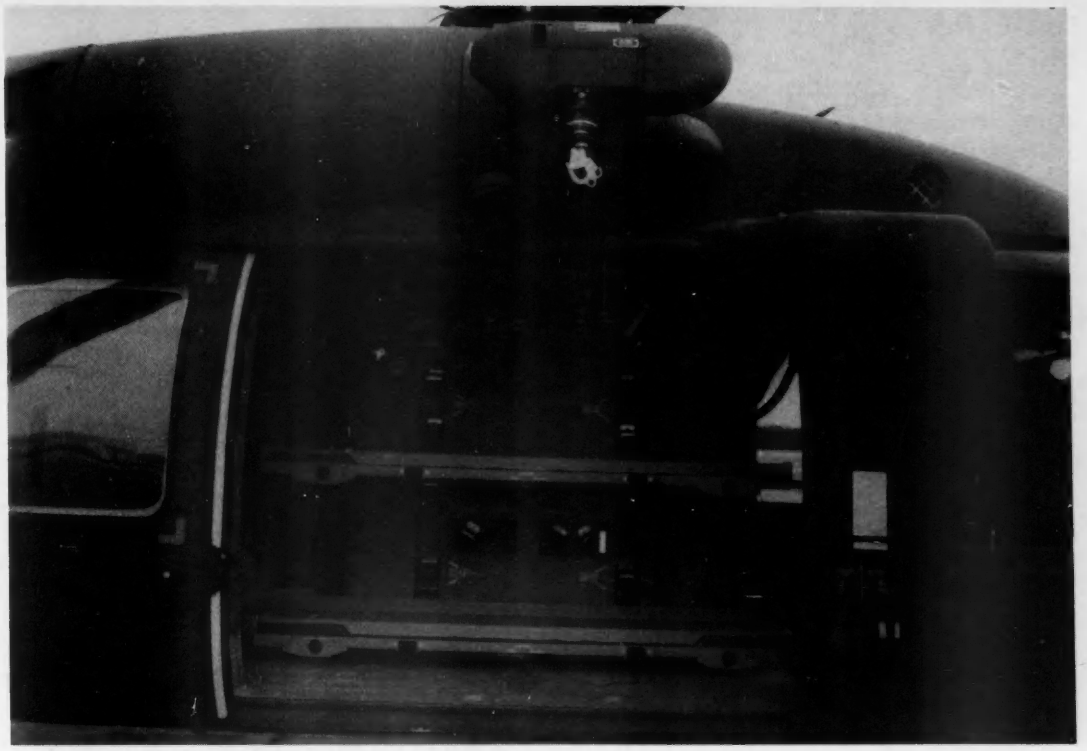
As the mission package was improved from AH-1 Cobra to AH-64, from OH-58C to OH-58D, the AMD is improving the air ambulance mission package to provide better patient care. No longer can, or should, the same 1960s UH-1A air ambulance technology be used to evacuate patients in 1991 or from future battlefields.

The last major improvement made in the field of aeromedical evacuation took place when the UH-1, with six internal litter capacity, replaced the OH-13 Sioux with its two external litters. Oh yes, a few UH-60 air ambulances have replaced UH-1 air ambulances. However, other than airframe improvements, no important improvements were made for patient care. The long overdue improvements made in the UH-60Q will provide equipment needed to help the patient and aircraft survive. These improvements will carry Army aeromedical evacuation into the 1990s.

Peacetime patient care technologies addressed in the UH-60Q fall into two basic categories—increased mission completion capability and better medical care for the patient.

Air ambulances must be able to complete their mission during peacetime and wartime. To complete missions during peacetime, the UH-60Q will be equipped with distance measuring equipment. This equipment will ease patient evacuation flights. Also, this equipment will ease instrument approaches during instrument conditions.

Another improvement is the addition of a dual mode infrared/white searchlight. This important safety feature will allow use of the white searchlight during unaided night flights to hospital roof-top helipads. Infrared searchlights will be used during aided night flights on the ranges.



UH-60Q Black Hawk air ambulance

Improvements made for the wartime mission will increase litter capacity, improve aircraft protection, and provide better patient care. Because of a space conflict between the litter carousel and the internal rescue hoist, only half the litter space is usable. The UH-60Q will provide an external rescue hoist that allows full use of all litter positions.

Since air ambulances conduct their missions as single, unarmed, unescorted aircraft, equipment must be added to survive on the battlefield. The UH-60Q will have provisions for the AN/AVR-2 Laser Warning System so the air ambulance may avoid enemy weapon systems.

The Enhanced Position Location Reporting System will allow air ambulances to maintain battlefield situational awareness. It also allows them to maintain microburst patient status and mission data.

Finally, the AN/ARS-6 Personnel Locator System will allow air ambulances to conduct combat search and rescue missions efficiently. The radio provides distance and azimuth to downed crewmembers using the AN/PRC-112 survival radio. No longer will an air ambulance waste time by searching for downed crewmembers without a radio designed to home to the survival radio.

Better patient care will be gained by adding an auxiliary heater and an oxygen-generating system. With no heat in the cargo compartment, the 55,000-British thermal unit auxiliary heater is a welcome addition for patient comfort and prevention of hypothermia.

The oxygen-generating system takes a portion of the engine bleed air and produces a continuous flow of oxygen. This important feature allows an air ambulance to work independently, without the logistics burden of resupplying bottled oxygen.

The UH-60Q will be the best air ambulance to date. It will combine increased survivability with better patient care. This combination will ensure that the American soldier will continue to receive the best aeromedical evacuation support in the world.

The Aviation Medicine Report is a bimonthly report from the Aviation Medicine Consultant of TSG. Please forward subject matter of current aeromedical importance for editorial consideration to U.S. Army Aeromedical Center, ATTN:HSXY-ADJ, Fort Rucker, AL 36362-5333.

WORLD HELICOPTER CHAMPIONS DEFEND TITLE

Captain T. Cowart
Public Affairs Officer
U.S. Precision Helicopter Team
Fort Rucker, AL

The United States Precision Helicopter Team (USPHT) is gearing up to defend their title as World Champions. Planning and preparations are under way for the 1992 World Precision Helicopter Championship to be held in England in September 1992.

The Federation Aeronautique Internationale (FAI) Helicopter Commission organized the World Helicopter Championship. The USPHT operates under the auspices of the Helicopter Club of America (HCA). The HCA conducts the U.S. National Championships under the Rules of Rotorcraft established by the FAI.

The first World Helicopter Championship was held in 1971 at Buckeburg, Germany. Previous World Helicopter Championships, in which the U.S. Army participated, were conducted in Poland (1981), England (1986), and in France (1989). The USPHT claimed

both the individual and team World Champion titles in each of these last three competitions. The 1992 championship should again be hotly contested.

Thirty-eight crews representing six countries competed in the 1989 event—the Union of Soviet Socialist Republics, France, the United Kingdom, the Federal Republic of Germany, Ireland, and the United States. In previous competitions each country was limited to five crews competing for the team title. Two additional crews were allowed to compete for the individual title.

The championship events conducted in France in 1989 were the timed arrival with the load drop-off event, the precision flying event, the long navigation event, and the slalom and skill event. Each of the four events was scored with a maximum of 200 points with points being deducted for minutes' deviation. A perfect score of 800 for the four events was possible.

The winners of the World Champion Title in 1989, Chief Warrant Officers 3 Jon Iseminger and Rudy Hobbs, scored an amazing 796 points. Less than 30 points separated the winners from those finishing in seventh place. The top seven places went to the American contingent!

Following the championship, members of the 1989 team were invited to Washington, DC, for an office visit with the Honorable Michael P.W. Stone, the Secretary of the Army. Later General Carl E. Vouno, Army Chief of Staff, accompanied team members to the Oval Office for a visit with President George Bush.

Before the 1989 World Championships, a lengthy team selection process occurred. This process will be repeated in the selection of the 1992 USPHT. The HCA will conduct the National Helicopter Championships in Las Vegas, Nevada, in March 1992. The competition will consist of three events and will determine a champion in each of three categories—Military, Commercial, and Private.

The initial briefing for the National Championship is scheduled for Friday, March 20, 1992. The competition will be held March 21 and 22, 1992. In the event of inclement weather, March 23, 1992, will be a makeup day. The awards banquet is scheduled for the evening of March 24, 1992.

After the National Helicopter Championship, the fly-offs to select the 1992 USPHT will be held at Fort Rucker, AL, in April 1992. These fly-offs will be open to members of the military aviation community and civilian and private operators who qualified during the National Helicopter Championship. The fly-off events will be the same as those to be flown in the 1992 World Championships in England.

The members selected for the 1992 USPHT will begin an intense training program in May 1992 at Fort Rucker. The program will culminate with a final phase of training and acclimatization in England just before the World Helicopter Championship.

Announcements concerning all competitions and team try-outs will be made in aviation publications during the next several months and throughout the military aviation communities via memorandums of instruction. Interested personnel and organization points of contact can call the USPHT headquarters for more information at DSN 558-3037/3038 or Commercial (205) 255-3037/3038.

ATC FOCUS

U. S. Army Air Traffic Control Activity

Evaluating Army Air Traffic Control Facilities

Master Sergeant Larry Presnell
U.S. Army Air Traffic Control Activity
Fort Rucker, AL

The U.S. Army air traffic control (ATC) system is a diverse operation with a fixed-base and combat support mission. This mission gives the best possible service for the safe, prompt, and orderly flow of air traffic. The ATC personnel that do this day-to-day mission are skilled and competent. It is a precise business. ATC personnel must follow guidelines. ATC is a business in which errors may cost human lives. Because it is such a precise and critical business, ATC procedures must be standardized. All ATC personnel should do business in the same manner so they know what action to take. In turn, the customer (the aviator) knows what to expect.

The Director, USAATCA, sets the standards and evaluates the quality of ATC operations, training, and equipment maintenance worldwide. The Systems Evaluation Division (SED), U.S Army Air Traffic Control Activity (USAATCA), conducts assistance visits and evaluations for all Army ATC personnel, equipment, and facilities. This division ensures the standardization of the ATC system throughout the Army. Flight inspection pilots, technicians, and air traffic controllers conduct these visits and evaluations. The Federal Aviation Administration certifies these personnel for flight inspection and evaluation.

The USAATCA flight inspection aircraft conducts airborne and ground evaluations of precision and nonprecision navigational aids and ATC equipment. These evaluations normally are conducted during the major army command's (MACOM's) Aviation Resource Management System visits, in conjunction with Directorate of Evaluation and Standardization. Headquarters, Department of the Army, Deputy Chief of Staff for Operations and Plans, mandates these visits and evaluations. They are an in-depth look at the ATC system and occur about every 18 months.

What should you expect when the SED evaluation team arrives at your facility? The USAATCA has published a checklist detailing all areas of interest. If your facility does not have a copy of the checklist, you should contact your MACOM representative. The checklist is currently being updated and will include tactical evaluations.

The SED evaluation team is there to help you. The team's primary focus is safety in ATC operations, training, airspace management, and equipment maintenance.

For fixed-base ATC, the evaluation team conducts a complete examination of each facility's operations and training program. The team reviews the facility operating forms for correct entries. They ensure all equipment checks and procedures are followed. The team observes personnel on duty in the facility to ensure they use standard ATC procedures. They check facility reference files for required publications. They also review these files to ensure the facility is maintaining the required charts, maps, drawings, etc.

The team examines controller training records for format. They also examined the records to ensure proficiency, remedial, and qualification training is being conducted and documented. They evaluate the facility training program to ensure trainers/trainees know what to study, when tests are due, and when to expect to be position qualified/facility rated.

Facility chiefs/training noncommissioned officers should ensure their facility training schedule reflects the new time limitations for obtaining a facility rating. Army Regulation 95-2, table 4-1, dated 10 August 1990, outlines these time limitations. This regulation states, "Tower personnel have 7-calendar months, ground-controlled approach personnel have 4-calendar months, and flight following personnel have 3-calendar months in which to get rated." Waivers are not required until the personnel exceed the calendar-month time limitations. However, a strong justification is still required to obtain a waiver.

Maintenance personnel evaluate all facility equipment to ensure it's within tolerance prescribed in technical manuals (TMs). The facility's maintenance forms and records are reviewed to ensure they comply with the Army's maintenance management program. The maintenance safety program (cardiovascular pulmonary resuscitation training, safety boards, grounding checks, etc.) is evaluated to ensure compliance with Technical Bulletin 385-4.

The primary objective in evaluating a tactical air traffic services (ATS) unit is to determine the unit's ability to deploy its equipment to the field and meet unit mission requirements. The unit installs, operates, and maintains all assigned equipment during the evaluation.

Tactical training programs and training records are checked for compliance with address indicating group message 90-03. An ATS examiner must be appointed to qualify controllers on all assigned ATC equipment. One common deficiency found during a tactical evaluation is the lack of trained, knowledgeable personnel to install and operate the AN/TSQ-71B, Landing Control Center. All controllers, including section chiefs, must perform the preliminary control settings, cursor alignment, operational checks, site and shelter requirements, and other procedures outlined in the TM.

If the following terms are unfamiliar to all 93Cs assigned to the ground-controlled approach team, then in-depth team training is required:

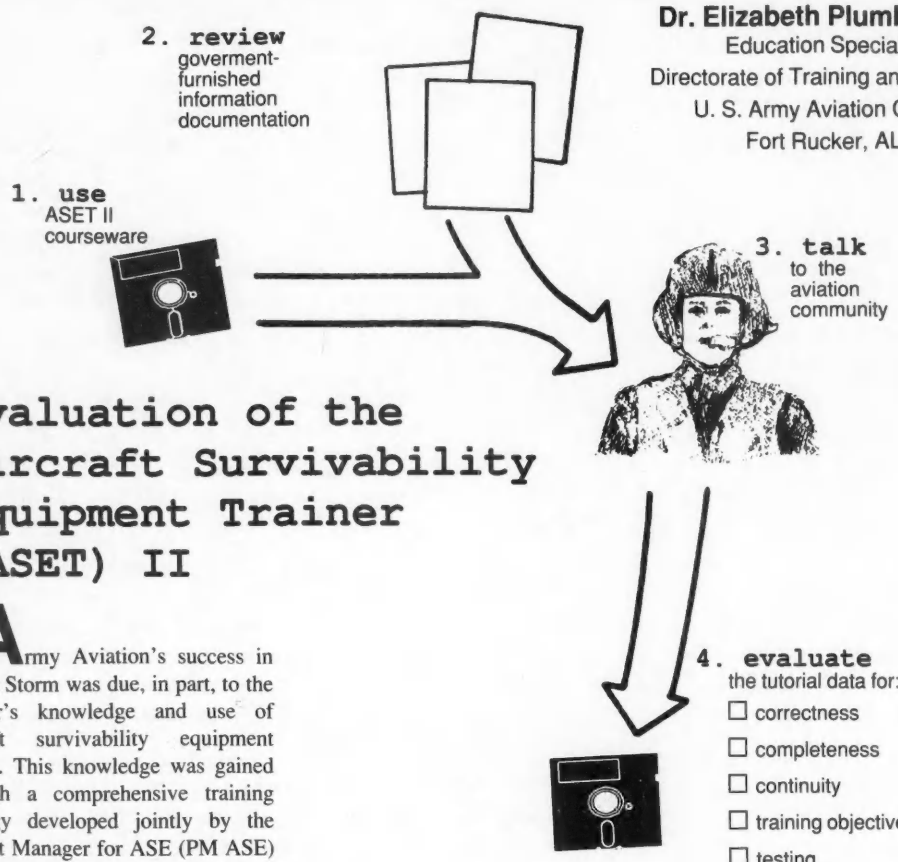
- ☐ ground point of intercept,
- ☐ runway point of intercept,
- ☐ threshold crossing height, and
- ☐ required obstacle clearance.

The radar must be installed and operational according to TM 11-5840-281-12-1, chapter 4, and Army Training and Evaluation Program 1-227-10-DRILL, Battle Drill 7, and appendices C and D. The approach must meet standards outlined in TM 95-226.

Discrepancies are forwarded through channels to the unit for corrective action. The goal of SED evaluation team members is to provide the Army aviation community with a safe, efficient air traffic environment.

Readers are encouraged to address matters concerning air traffic control to:
Commander, USAAVNC, ATTN: ATZQ-ATC-MO, Fort Rucker, AL 36362-5265.

Dr. Elizabeth Plumb, Ed.D.
Education Specialist
Directorate of Training and Doctrine
U. S. Army Aviation Center
Fort Rucker, AL



Evaluation of the Aircraft Survivability Equipment Trainer (ASET) II

Army Aviation's success in Desert Storm was due, in part, to the aviator's knowledge and use of aircraft survivability equipment (ASE). This knowledge was gained through a comprehensive training strategy developed jointly by the Project Manager for ASE (PM ASE) and the U.S Army Aviation Center. Part of this training strategy is the ASET II training program.

The ASET II training program is a desk-top trainer that teaches the individual aviator several things: threat limitations and capabilities; ASE employment and capabilities; and tactical maneuvers and countermeasures for the scout, attack, cargo, utility, and special electronic aircraft. The ASET II uses the Electronic Information Delivery System (EIDS) as its delivery system.

The ASET II classified courseware is designed in three modes—tutorial, game, and management. The highly interactive courseware allows the aviator to learn all aspects of threat identification, threat evaluation, and ASE operation. Then the aviator can apply them practically in tactical situations.

PM ASE has recently fielded a limited number of evaluation courseware. This courseware was designed for Desert Storm and contains a special section of Iraqi threat systems. CAS, Inc., of Huntsville, AL, is currently under contract to evaluate both the Desert Storm program and the standard ASET program scheduled for worldwide fielding in December 1991.

ASET II software and the EIDS hardware are being evaluated by col-

lecting data from the aviation community. The figure shows the methodology for evaluating ASET II.

The ASET II tutorial mode will be evaluated for correctness, completeness, quality, validity, and pertinency. The aviators will be asked to determine whether training objectives are realistic and obtainable. They will also be asked if the lesson tests are accurate and complete in examining the aviator's ASE and threat knowledge. Data collected from the evaluation of the tutorial mode will be used to update the ASET II program in fiscal years 1992 and 1993.

The ASET II gaming mode places the aviator in a combat mission scenario that reinforces decision-making skills. Evaluation of this mode will determine the realism of the combat missions and accuracy of weapon time lines.

The number of tasks and task loading during the combat scenario will be investigated. Data from the game mode evaluation will be used to update mission scenarios so the realistic mid, low, and high mission scenarios are presented.

The objective of ASET II is to present ASE training to the individual aviator. CAS, Inc., is planning to investigate the total training effectiveness of the ASET II system. The total program format, content, and method of presentation will be investigated to determine if the objective is met.

The EIDS system is a relatively new training media. The EIDS computer system, designed for user friendliness, requires limited instruction for one to operate this system. During the ASET II evaluation, the EIDS delivery system will be evaluated for user friendliness. This will determine whether additional instructions are needed and if the EIDS authoring system presents quality displays.

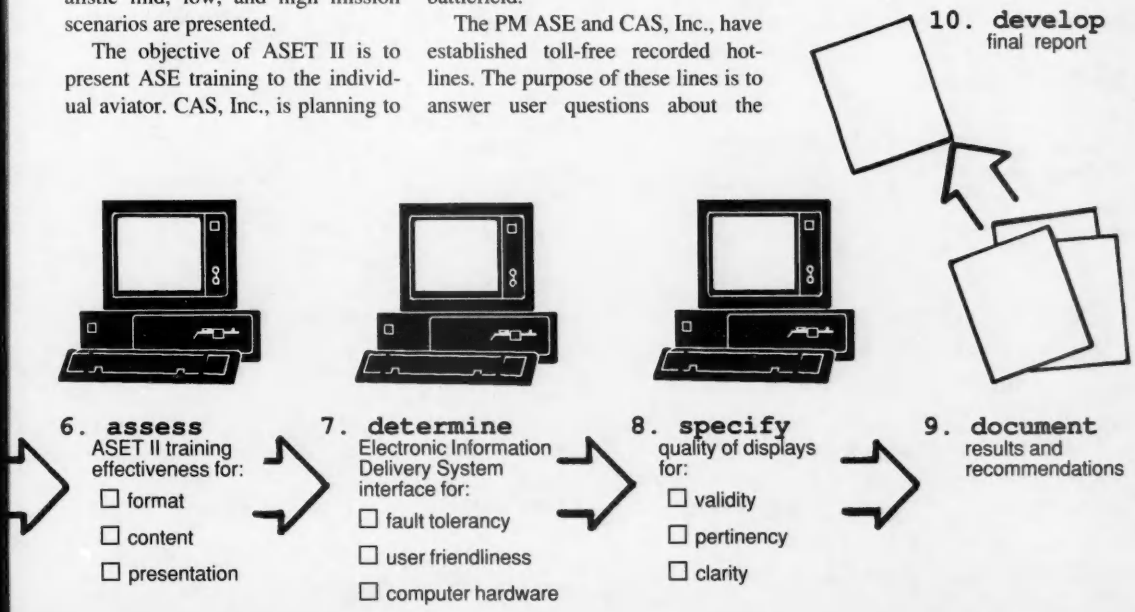
As with most electronic systems, EIDS may need occasional repairs. During the ASET II evaluation, fault tolerance will be determined and possible EIDS hardware improvements identified. The evaluation of ASET II will result in a comprehensive training program that will equip the aviator with the ASE knowledge for success on the future battlefield.

The PM ASE and CAS, Inc., have established toll-free recorded hotlines. The purpose of these lines is to answer user questions about the ASET II courseware, EIDS hardware, ASET II distribution, and identify trends. The hotline operates from 0800-1600, central time, 5 days a week. Here are the ASET II hotline numbers:

ASET II HOTLINE	
CONUS,Alaska,Hawaii...	800-545-ASET
Panama	800-111-0420
South Korea	008-1-800-901-8289
Germany	0130-81-0439

Twenty-five special "Call Me" cards for Saudi Arabia have been issued. For a "Call Me" card number, call AUTOVON 693-1477.

Mail comments of the ASET II to Commander, USAAVNC, ATTN: ATZQ-TDS-AS, Fort Rucker, AL 36362-5163.



ARMY AVIATION ANNUAL WRITTEN EXAMINATION

The Passing of an Aviation Institution

Captain James A. Cox, Jr.
Evaluation Division
Directorate of Evaluation and Standardization
U.S. Army Aviation Center
Fort Rucker, AL

On 7 June 1991 the United States Army Aviation Center (USAAVNC) sent the message at right to major Army commands worldwide.

Over the years, the AAAWE provided aviators a chance to "get back into the books." The AAAWE—through the reference data book—gave aviators the chance to answer questions based on numerous publications of importance to Army aviators. The open book AAAWE provided aviators

SUBJECT: ELIMINATION OF THE ARMY AVIATION ANNUAL WRITTEN EXAMINATION (AAAWE)

1. FOR THE PAST TWENTY YEARS, THE ARMY AVIATION ANNUAL WRITTEN EXAMINATION (AAAWE) HAS TESTED THE ARMY AVIATOR'S KNOWLEDGE AND TECHNICAL PROFICIENCY REGARDING REGULATIONS, PUBLICATIONS, AERODYNAMICS, AEROMEDICAL FACTORS, TACTICS, SAFETY, AND SPECIAL MISSIONS. ARMY AVIATION HAS MATURED AS A BRANCH SINCE THE INCEPTION OF THE AAAWE. TODAY, THE AIRCREW TRAINING PROGRAM (ATP) IS THE CORNERSTONE OF STANDARDIZATION THROUGHOUT THE FORCE. OUR AVIATORS MUST SUCCESSFULLY COMPLETE ANNUAL AND NO-NOTICE HANDS-ON, WRITTEN, ORAL, AND PHYSICAL EXAMINATIONS TO EVALUATE THEIR WARFIGHTING SKILLS AND TEST THEIR KNOWLEDGE AND FLYING ABILITIES UNDER DAY, NIGHT, NIGHT VISION DEVICES AND INSTRUMENT CONDITIONS. THE ANNUAL REQUIREMENTS OF THE ATP FAR EXCEED THAT OF THE AAAWE. BY TODAY'S STANDARDS, THE AAAWE OUTLIVED ITS USEFULNESS.

2. THE PURPOSE OF THIS MESSAGE IS TO ANNOUNCE MY INTENT TO TERMINATE THE AAAWE REQUIREMENT ON 30 SEPTEMBER 1991. ELIMINATION WILL STOP DUPLICATION OF EFFORT AS WELL AS PROVIDE BUDGETARY AND MANPOWER SAVINGS. ITS ELIMINATION WILL NOT HAVE ANY ADVERSE EFFECT ON THE HIGH STANDARDS THAT WE MAINTAIN IN ARMY AVIATION. THE CURRENT AAAWE REQUIREMENT IS STILL IN EFFECT AND CURRENT VERSIONS WILL BE UTILIZED FOR THE REMAINDER OF FY 91.

3. THIS ACTION ENJOYS THE FULL SUPPORT OF OUR AVIATION COMMANDERS IN THE FIELD.

the opportunity to verify their answers with the reference data book (RDB) and, thus, engrave the correct answers in memory. The RDB enabled aviators to scan extracts from selected aviation-related publications, which one aviator estimated could comprise a stack over 6-feet deep.

The AAAWE program was ambitious in that the test production cycle was an annual event with implacable milestones—what some product managers called "high risk" because of the many variables. Only through the cooperation of many was the AAAWE program possible.

The AAAWE annual cycle involved distinct phases—question development, test question selection, validation, production, distribution, and testing. Each phase involved the cooperation of many members of the Army Aviation community.

Question Development

USAAVNC subject matter experts not only provided new test questions but also reviewed existing questions for accuracy and relevance. Questions on aerodynamics, meteorology, tactics and special missions, and the use of aviation life support equipment came from many dedicated academic instructors in the USAAVNC training departments—the Aviation Training Brigade and the Department of Tactics and Simulation.

The Directorate of Evaluation and Standardization (DES), Flight Standardization Division, provided important questions on regulations. USAAVNC had memorandums of agreement with U.S. Army, Europe and Eighth U.S. Army under which they developed the first 20 questions on regulations for each examination. As a result, DES helped coordinate test questions written for aviators assigned to Korea and Germany so the complete test booklets could be printed at USAAVNC. The Directorate of Training and Doctrine (DOTD), Aircraft Survivability Training Management Branch, developed questions on aircraft survivability equipment. The Directorate of Combat Developments, Threat Support Office, developed threat questions by aircraft system, using the latest unclassified information available as the basis for their test questions. Instructors on threat from the training departments and the 1st Aviation Brigade provided valuable input. It is a credit to their skill that some threat vehicles, which appeared for identification on the AAAWE, were viewed in real life by aviators during Desert Storm.

The U.S. Army Safety Center and the USAAVNC Aviation Branch Safety Office provided key questions on safety. These questions were considered so significant that in 1989 a separate AAAWE subject area on safety was established. The U.S. Army School of Aviation Medicine developed aeromedical questions. These questions often reminded aviators of the health hazards, such as perils to hearing. They also caused them to reflect on the dangers of caffeine.

Test Question Selection

The AAAWE test selection boards met to decide which questions should go on the next AAAWE. Representatives from the organizations who helped develop AAAWE test questions attended the boards. Participants were very good at winnowing out questions. Beginning in 1989, the following rigorous rating scale was used:

1. good enough for both test versions,
2. good enough for one test version,
3. so what/who cares,
4. requires revision with a conditional rating,
5. remove question from question database for this aircraft system, and
6. remove question from databases for all aircraft systems.

A study team of first-rate Army aviators—captains and aviation warrant officers—devised the above rating scale. As a result of their research,

they provided valuable advice and guidance to be incorporated into the AAAWE test control officer (TCO) booklet.

AAAWE Validation

The questions that survived the rating process by the test selection boards had tougher scrutiny ahead of them. Casual officers verified each test question answer against all the references given as authority for the answer. The dedication of the casual officers cannot be overstated. Pulled into the AAAWE development process for short periods of time, they found errors in the questions or their references. When they found an error, they coordinated with the subject matter expert who wrote the question to ensure the final question and its reference were correct.

Aviators at USAAVNC took the validation test versions of the AAAWE. They deserve credit for evaluating what the AAAWE had and also what it needed, i.e., threat. Each of their written comments was considered in developing the AAAWE sent to the field. This group of aviators deserves special thanks because they helped identify, for example, questions with two possible answers, with incomplete references, and with ambiguous wording.

Special recognition is due the many AAAWE TCOs, worldwide, who participated actively in the validation of the AAAWEs. Their professionalism can scarcely be overstated. They ensured the test questions were written, answered, and referenced correctly. Their efforts were all the more remarkable because they returned their comments to USAAVNC very quickly. Thus, the AAAWE program manager could send essential errata to the field before the new AAAWE test year. The AAAWE TCOs suggested that the AAAWE included a section on meteorology. Their suggestion was implemented in 1989.

AAAWE Production

Behind the AAAWE test booklets, which appeared every year, was a talented and dedicated group of civilian employees whose primary goal was to create a quality AAAWE. Therefore, as Army Aviation says goodbye to the AAAWE, let us also say thank you to those dedicated professionals whose efforts served the AAAWE program for many years. An editor, a word processor, a visual information specialist, the photographic section, the graphics section, and the printers worked together to create a quality AAAWE and to meet the printer's deadline.

Editors are often taken for granted, but their efforts help create a clear, professional product. There are some words that seem to belong to Army Aviation—but not everyone agrees how to spell them. In this merry group are words such as *aircrew/air crew, en route/enroute,* and *crewmember/crew member*—not to mention the infamous *goggle*, which some editors insist is a verb and others, a noun.

A host of skilled professionals were involved in AAAWE production. The Chief, DOTD Word Processing Center (WPC), USAAVNC, helped numerous AAAWE action officers complete tasks with a short suspense. Her remarkable spirit of cooperation is well known—as is WPC's remarkable abil-

ity to deliver excellent work in the face of immovable deadlines. Visual information specialists ensured that threat photographs were clear, professional, and camera-ready for the printers. The Photographic Section, Training Service Center, Directorate of Plans, Training, Mobilization, and Security (DPTMSEC), reproduced photographs needed for the AAAWE with speed, care, and quality. The Graphics Section, Training Service Center, DPTMSEC, developed the attractive covers for test materials. And last, the USAAVNC Field Printing Plant workers produced the tests and coordinated the contract printing of materials, as needed. They deserve special credit for printing legible threat photographs.

AAAWE Distribution

The AAAWE TCOs requested materials from the USAAVNC. The Training Support Branch, DOTD, USAAVNC, ensured that these materials; i.e., test booklets, reference data books, TCO handbooks, and errata, were mailed to the field. They had a high volume of mail to send in short periods of time. They ensured that overseas shipments were mailed first.

AAAWE Testing

The AAAWE TCOs, worldwide, administered the AAAWE as part of the Annual Proficiency and Readiness Test (APART) requirements. They kept the AAAWE test materials up-to-date as new publications appeared that could affect test questions and answers.

Manpower Constaints. A major obstacle the AAAWE has faced was lack of manpower. In earlier years the AAAWE was supported by nine persons, including five field grade officers. In recent years, however, the AAAWE had only one table(s) of distribution and allowances position augmented by casual officers, and, for brief periods, temporary clerical support.

AAAWE Test Results. For a time, AAAWE results were provided to company and battalion commanders. However, when the AAAWE added sections on safety and threat, it was necessary to reprogram the optical scan reader. When it was not possible to obtain the necessary technical support, the reports to the field were suspended.

Anyone willing to contribute historical information relating to the AAAWE may telephone the USAAVNC Historian, DSN 558-5338 or Commercial (205) 255-5338. Written requests may be sent to Commander, United States Army Aviation Center, ATTN: ATZQ-MH (Dr. Kitchens), Fort Rucker, AL 36362. Of special interest are the names of persons who worked on the AAAWE during specific years with an overview of the test strategy and contents of the AAAWE.

Early in 1991, DES proposed an AAAWE consisting of 35 questions generic to all aviators with 15 questions to be developed by local commanders. But when all factors were weighed, particularly heavy cuts in budget and manpower, the Aviation Branch Chief decided to stop the duplication of effort.

The 1992 AAAWE test selection board selected questions for the 1992 AAAWE. However, the decision to eliminate the 1992 AAAWE occurred before the test was validated.

For those who would like to have a shot at some of the AAAWE questions selected by the 1992 test selection board, read on. See how you do on the last AAAWE ever!Answers are at the end of the test questions.

DES welcomes your inquiries on areas of major importance. Write to us at : Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Fort Rucker, AL 36362-5208; or call us at DSN 558-3504 or Commercial 205-255-3504. After duty hours call Fort Rucker HOTLINE, DSN 558-6487 or Commercial 205-255-6487 and leave a message .

ARMY AVIATION ANNUAL WRITTEN EXAM

Answers are on page 40.

1. Keying either 121.5 or 243.0 for 30 seconds or more will activate SARSAT (search and rescue satellite). Therefore, transmissions on 243.0 or 121.5 must not exceed a 2-second keying limit, except in actual emergency or distress situations.

A. 10
B. 15
C. 20
D. 25

2. If 2 days have elapsed since the last flight as PI or PC in the mission, type, design, and series, a proficiency flight evaluation must be administered to regain currency.

A. no time limit if you have at least 1500 hours total time in your primary aircraft
B. 45 days if you have less than 700 hours
C. 45 days regardless of total time
D. 60 days regardless of total time

3. With regard to aviation life support equipment (ALSE), the flight surgeon

A. evaluates medical material.
B. monitors the fitting and use of ALSE.
C. assesses health hazards.
D. designs medical criteria.

4. The 2S6 is fitted with an electro-optical tracking system that can probably be slaved to the Hot Shot radar system. What surface-to-air missile is employed on the 2S6 regimental air defense vehicle?

A. SA-15 (no NATO designator)
B. SA-16 Gimlet (Russian *Igla* for needle)
C. SA-17 Grisly
D. SA-19 (no NATO designator)

5. The SA-4 is a medium-to-high altitude, radio-command system with semiautomatic homing. It is mounted on a tracked transporter-erector-launcher with a 360 degree traverse. What weapon system provides close air defense protection for the launcher?

A. ZU-23
B. ZSU-23-4
C. 2S6
D. BMP-2

6. The AN/ALQ-136(V) provides automatic jamming protection against what type of threat missile?

A. pulse radar-guided
B. continuous wave, radar-guided
C. infrared seeking
D. beam rider

7. The AN/APR-44(V) is designed to provide the pilot with a warning of surface-to-air and air-to-air missile threats. What type of missile tracking radar does this receiver identify?

A. pulsed acquisition
B. continuous wave
C. beam rider
D. infrared

8. The AN/AVR-2 is a passive warning system that displays threat information on the AN/APR-39(V) radar warning indicator. What type of threat does the AN/AVR-2 detect and display?

A. pulse radars
B. continuous wave radars
C. lasers
D. optics

ARMY AVIATION ANNUAL WRITTEN EXAM

9. The M-130 system provides aircraft protection against which threats?

A. optical
B. infrared-seeking missiles
C. radar-controlled antiaircraft artillery
D. both B and C

10. The Roland is a surface-to-air missile system. What type of guidance principle does it employ?

A. infrared homing
B. semiactive radar homing
C. modulated laser beam rider
D. command

11. A defined area of airspace that reserves airspace and allows the commander to restrict a volume of airspace from users not involved with his operation is called

A. minimum risk route (MRR).
B. low-level transit route (LLTR).
C. high-density airspace control zone (HIDACZ).
D. air corridor.

12. A temporary bidirectional corridor through the areas of organic low-level air defenses of surface forces in a restricted operations zone (ROZ) is called

A. minimum risk route (MRR).
B. low-level transit route (LLTR).
C. high-density airspace control zone (HIDACZ).
D. coordinating altitude.

13. The hazards to personnel and equipment from lasers depend largely on the radiation wavelength, the beam intensity, and the exposure time. In-band visible infrared light entering the pupil will harm the retina cause which of the following?

A. flash blindness
B. minor and major retinal burns
C. impaired night vision
D. all of the above

14. Thermal microwaves have been positively identified as potential biological hazards to personnel. What are these thermal effects?

A. effects on behavior and vision
B. effects on vision and hearing
C. effects on memory and cardiovascular system
D. effects on behavior and memory

15. Electromagnetic pulse (EMP) is a wave of electromagnetic energy that is produced by a nuclear detonation when gamma rays make contact with the atmosphere. Which of the following statements is true concerning the effects of EMP?

A. EMP can be visually perceived with the naked eye.
B. EMP will not damage electrical components on aircraft since these components are EMP protected.
C. EMP can destroy circuitry even with the radios and the antennas disconnected.
D. It should be assumed that every electrical component will be totally destroyed by EMP.

16. Exposure to intense sunlight for 2 to 5 hours causes a definite decrease in your scotopic visual sensitivity. This sensitivity can persist for how long?

A. 2 hours
B. 5 hours
C. 7 hours
D. 9 hours

ARMY AVIATION ANNUAL WRITTEN EXAM

17. When approaching a line of mountains or clouds, aviators may feel they need to climb even though their altitude is adequate. Also, when flying parallel to a line of clouds, aviators may tend to tilt the aircraft away from the clouds. This illusion is

A. height perception illusion.
B. altered planes of reference.
C. false horizons.
D. size distance illusion.

18. While under instrument meteorological conditions (IMC) and upon encountering freezing rain that produces severe glaze icing, the aviator should immediately do which of the following?

A. climb above the inversion
B. turn away from area of icing
C. descend to lower altitude
D. none of the above

19. All US Army aircraft produce high-intensity noise. At what frequency spectrum is the noise most intense?

A. low
B. middle
C. high
D. harmonic

20. You have noticed that many personnel in your unit wear their flight gloves in various ways. The proper wearing of gloves is to

A. wear the gloves with the sleeves of the flight suit tucked under the gloves.
B. wear the gloves with the sleeves of the flight suit rolled down and fastened above them.
C. wear the gloves with the sleeves of the flight suit rolled down and fastened over them.
D. any of the above methods to ensure personal comfort.

ANSWERS

1. B, DOD FLIP Flight Information Handbook, p A-5, para 2
2. D, AR 95-1, p 6, Chap 4-2
3. B, AR 95-3, p 25, para 7-1g(3)
4. D, FM 1-101, p 1-10, para 1-4d
5. A, FM 1-101, p 1-11, para 1-5a(1)
6. A, FM 1-101, p 1-35, and 1-36, para 1-10b or 1-11b
7. B, FM 1-101, p 1-37, para 1-11a(3)
8. C, FM 1-101, p 1-38, para 1-11d(1)
9. D, FM 1-101, p 1-38 and 1-39, para 1-11c(1), 1-11g(4)
10. D, FM 1-101, p 2-14, Table 2-7
11. C, FM 1-101, p C-13, para C-6a(1)
12. B, FM 1-101, p CV-15, para C-6a(5)
13. D, FM 1-101, p 6-4, para 6-4a and para 6-4a(1)
14. B, FM 1-101, p 6-7, para 6-4b(1)
15. C, FM 1-102, p 13-14, para 2-15b(1)
16. B, TC 1-204, p 1-79, para 1-8a(1)
17. B, TC 1-204, p 1-21, para 1-12f
18. A, FM 1-230, p 10-10, para 10-4 d(4)
19. A, FM 1-301, p 6-5, para 6-8
20. C, FM 1-302, Change 1, p 4-4, para 4-8

Automated Weather Observing System
Automated Surface Observing System

Lieutenant Colonel Richard G. Carlson
Chief, Aeronautical Information Division
U.S. Army Aeronautical Services Agency
Cameron Station
Alexandria, VA

The National Weather Service (NWS), the Federal Aviation Administration (FAA), and the Department of Defense manually collect routine surface weather observations at about 950 weather observing facilities. This function is labor-intensive. It involves over 1,200 personnel, full or part-time, in the NWS alone. This effort increases during severe weather when rapidly changing conditions require frequent updates to surface observations.

Generically, the FAA has recognized and approved Automated Weather Observing Systems/Automated Surface Observing Systems (AWOS/ASOS) for aviation service support since 1960. Before joining NWS and Navy contract efforts for ASOS, the FAA certified these systems and contracted with QUALIMETRICS, Inc., CA, to install 160 systems nation-wide by April 1991. The contract included an option for 40 more to be installed in Alaska by October 1991.

The FAA recognizes AWOS in any form and produced by any manufacturer, if the system complies with FAA Advisory Circular (AC) 150/5220-16A. The ASOS, under joint NWS/FAA/Navy contract with AAI Corporation, Hunt Valley, MD, is the current generation of automated observing systems for federal use. Nonfederal AWOS applications must comply with AC 150/5220-16A and are termed AWOS.

AWOS can be configured modularly, using a central processor and input from any number or combination of sensors. The FAA certifies the following AWOS configurations:

AWOS A, which contains only dual-pressure sensors that measure pressure and report altimeter settings to pilots.

AWOS I, which contains AWOS A sensors—plus sensors to measure wind data (speed, direction, and gusts), temperature, and dew point—and reports density altitude.

AWOS II, which contains AWOS I sensors plus a visibility sensor.

AWOS III, which contains all AWOS II sensors plus a cloud-height sensor.

AWOS IV, which contains all AWOS III sensors plus precipitation occurrence, type and accumulation, freezing rain, thunderstorm, and runway surface condition.

Computer-generated voice reports output from AWOS by navigational aids or very high frequency (VHF). Transmission on the VHF radio can be continuous or in a 3-minute burst triggered by three clicks on the aircraft transmitter.

Besides the system's video output, messages may be offered to dial-in phone customers by modem to a remote personal computer or recorded voice message. For AWOS III or better, an optional link can

be established to the national weather network(s) for information available nationally for forecasting and flight planning.

Future AWOS data acquisition systems will be located in each Air Route Traffic Control Center (ARTCC) to collect and consolidate of AWOS reports. FAA is designing options to allow AWOS data directly into the Weather Message Switching Center, using the National Airspace Data Interchange Network.

Modes of Operation

Mode 1, Pull-time, Automated Operation. AWOS operates 24 hours a day without manual input. Automated weather observations are updated minute-by-minute.

Mode 2, Full-time, Automated Operation with Local Notice to Airmen (NOTAM). AWOS operates as Mode 1 with manually recorded NOTAMs appended to the voice reports. NOTAM information is for local broadcast only, not by longline.

Mode 3, Full-time, Automated Operation with Local NOTAM and Manual Weather Augmentation. AWOS operates in Mode 2 with manual augmentation of appended weather entries limited to thunderstorms, all types of precipitation, and obstructions to vision. Entries can be either by handmike or keyboard according to Federal Meteorological Handbook (FMH) procedures and terminology. Information also can be forwarded over the Service A teletype network.

Mode 4, Part-time, Manual Operation. Mode 4 normally is used as a backup for standard observations incorporated in the Service A teletype network. Voice output is by handmike, manually, using information gathered by AWOS sensors, except manually derived ceiling/sky condition and visibility using FMH definitions. NOTE: FAA policy precludes a mixing of automated and "weather observer" observations. This mode provides for an "either or" option.

International Civil Aviation Organization

During an International Civil Aviation Organization (ICAO) Communications/Meteorology/Operations Division Meeting, 5 to 28 September 1990, agenda item 8 was a discussion of Automatic Weather Observing Stations. The members concluded that automated systems can observe and report surface wind, runway visual range, air temperature, dew-point, and atmospheric pressure according to ICAO meteorological parameters.

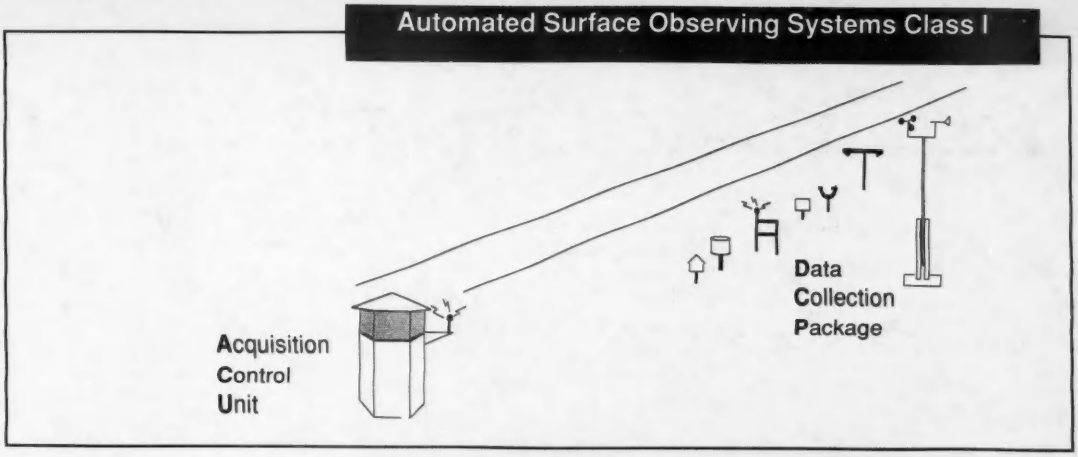
To fully meet ICAO requirements, an observer must insert visibility, present weather, cloud, and supplementary information. Members agreed that for ICAO approval, AMOS must ensure current "spot" observations over a larger area and the observation of weather phenomena near aerodromes. ICAO meteorological representatives will meet again in Spring 1992.

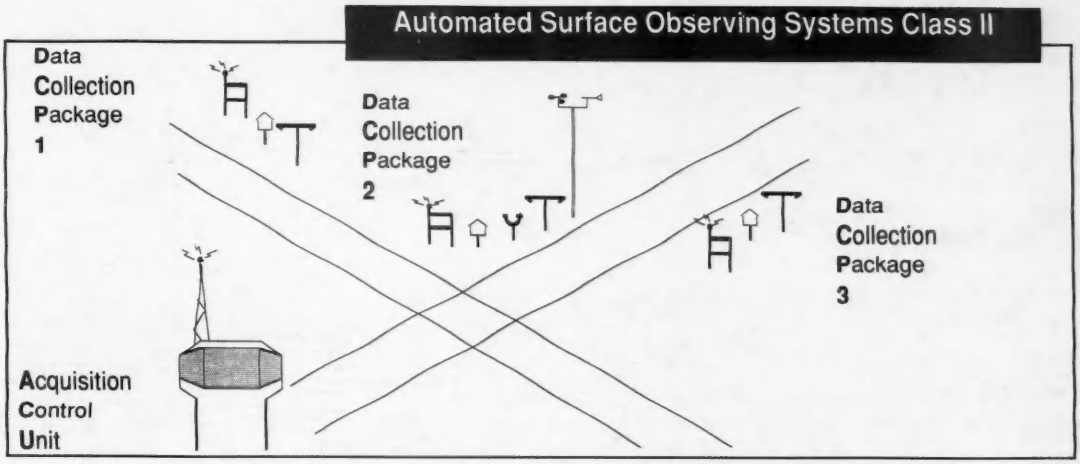
ASOS will be installed at some 1,700 locations nation-wide to help NWS/FAA/Navy weather collection and reporting tasks. The NWS/FAA/Navy, jointly, awarded a 5-year, $200 million contract to AAI Corporation, Hunt Valley, MD, to produce Class I and Class II ASOS.

Class I ASOS is targeted for small airports. Class II ASOS is targeted for larger towered airports. Because of the modular, off-the-shelf features of ASOS, many possible configurations can be installed by site owner or management.

ASOS automatically measures meteorological parameters, reduces and analyzes the data by computer, and broadcasts weather reports. These reports can be received on aircraft radios or telephone lines. Weather information provided by ASOS fulfills requirements of various Federal Aviation Regulations including the requirements necessary for operating a control zone. ASOS weather information also can eliminate the need for a remote altimeter setting at locations not having a full-time weather observer. For example, an ASOS weather report eliminates the remote sensor penalty for published minimum descent altitudes at airports with an instrument approach.

ASOS has an acquisition control unit (ACU) that processes the data collected by radio/wire link from up to three data collection packages (DCPs). DCPs collect raw data from up to 35 sensors by fiber-optic links. The ACUs, with displays, local DCP, interactive terminal, and printer, usually are located in airport operations. The DCPs are located at key runway or airfield central locations, as needed. The





ACU has many data communication and output ports that report minute-by-minute, hourly, and special observations. Output can be configured for use by, and provided to, tower video displays, FAA ARTCC, aviation weather information processing systems, airline displays, user modems for dial-in service, radio transmissions, and printers.

Sensors observe and report altimeter setting, density altitude, sea level and barometric pressure, and cloud height and sky condition. These sensors also observe and report wind speed and direction, temperature and dew point, visibility, precipitation, and accumulation.

Installation of systems procured under joint FAA/NWS/Navy contract began in July at sites in the mid-west and is proceeding with an aggressive schedule. Presently, the Army and Air Force are evaluating the ASOS for use at their respective installations according to regulations and agreements governing weather support.

USAASA invites your questions and comments and may be contacted at DSN 284-7773.

An AviationBrigade Goes to

Colonel Daniel J. Petrosky and **Major Marshall T. Hillard**
4th Brigade, Ist Armored Division, APO New York

All photos by Chief Warrant Officer 3 Dean G. Smith
C Company, 3-I Attack Helicopter Battalion (Night Eagle)

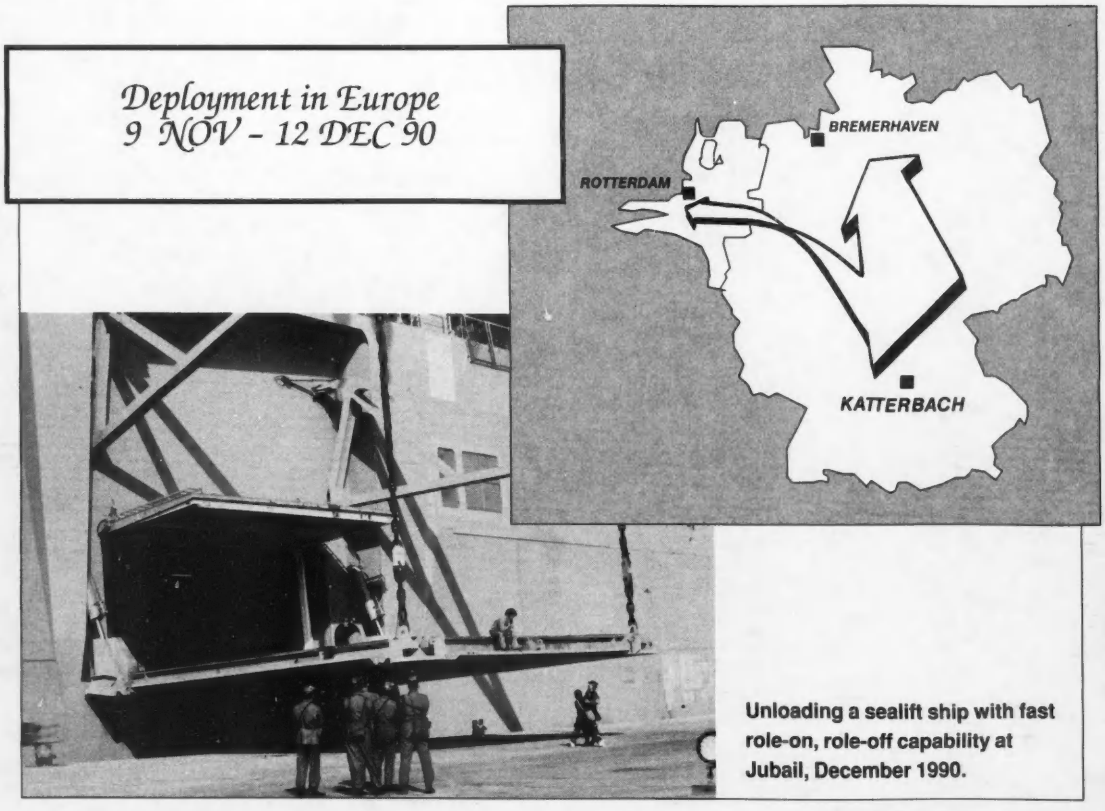
War

An account of the deployment of the 4th Brigade, 1st Armored Division, to Southwest Asia and the participation of its members in Operation Desert Shield and Operation Desert Storm

From Katterbach to Rotterdam: An Aviation Brigade Prepares for War

Many of the soldiers and families of the 4th (Iron Eagle) Brigade, lst Armored Division, in Katterbach, Germany, were probably watching Armed Forces Network television on the night of 8 November 1990. They learned of President George Bush's decision to deploy the lst and 3d Armored Divisions to Saudi Arabia. Saddam Hussein had refused to comply with United Nation (UN) resolutions ordering him out of a devastated Kuwait. As a result, a somber Secretary of Defense Richard Cheney and Chairman of the Joint Chiefs of Staff General Colin Powell gave a detailed listing of the many additional combat, combat support, and combat service support units that would rush to the Kuwaiti Theater of Operations (KTO). They would do so in time to enforce President Bush's 15 January 1991 deadline for Iraq to comply.

Rumors had proliferated for weeks before—two armored divisions would supplement the forces in theater. But which two? It made sense to the leaders of the



Unloading a sealift ship with fast role-on, role-off capability at Jubail, December 1990.

Iron Eagle Brigade that the logical choices would be those heavy divisions in the rapidly changing Central European theater. "Build Down," whether you thought it clever or not, had become a reality to many units in U.S. Army, Europe (USAREUR) weeks before when Secretary Cheney and General Powell announced phase I of the European drawdown. The possibility of joining the Army Aviation units already in place intrigued the entire brigade from the commander on down. The challenges offered by this scenario and this environment seemed tailor-made for Army Aviation. All that remained was to get there and get the job done.

The "job" started immediately, with almost round-the-clock briefings, updates, planning sessions, and reviews of lessons learned by the aviation assets in the KTO. Many things became instantly evident.

Although it was apparent that we would not have to fight our way out of the boats and airplanes to enter the KTO, we would have to deploy with anything and everything we thought we would need immediately. "If you want it, bring it with you," admonished the afteraction reviews of the l0lst, 82d, and 24th Divisions.

Class IV materials for defensive positions; package petroleum, oils, and lubricants (POL) products for aircraft and ground vehicles alike; batteries for lights; radios; night vision devices; global positioning or long-range navigation systems; and luxury items such as coolers and portable showers were among the most critical and desired assets. To obtain any of these meant sorting and sifting through the kilometers (km) of red tape surrounding local procurement procedures.

In many cases, the regulations governing the field ordering officer and S4 functions often inhibited immediate acquisition, frustrating commanders and sergeants major. U.S. Army Division Support Command and Material Management Center leaders told us that all of our needs would be met. "The check's in the mail" became a favorite response to such promises.

Because of the massive amount of equipment, personnel, and materiel, planning was critical in getting the brigade's essential assets to the KTO on time and mission-ready. The responsibility to identify, preposition, and prioritize such equipment for loadup on vehicles, milvans, Sealand vans, and connexes fell largely on the noncommissioned officers (NCOs) of the brigade. They did a great job.

As it turned out, almost every critical item that the brigade needed was immediately available because the NCOs had the foresight to place it on vehicles. Early on, we had been directed to expect an allowance of only a ruck sack, "A-bag," weapon, and chemical protective mask for our flight to KTO. The arrival, location, and delivery of these containers became a matter of some difficulty at brigade level.

Initially, we had been told that we could depart from Bremerhaven, Rotterdam, or Antwerp. Rumors again multiplied, with reports that aircraft might go to one place, vehicles to another, by rail, by road march, by barge. Ultimately, all aircraft flew to Rot-

The ship "Cape Farewell" leaves Dammam.

terdam, while our wheeled vehicles ended up road marching to Rotterdam and Bremerhaven for deployment. These two events seemed remarkable in their simplicity and efficiency.

Between the period 29 November to 5 December, all of the brigade's wheels and aircraft made it to port without incident, breakdown, or significant delay. Again, the leadership provided by the NCOs, under the watchful eye of brigade Command Sergeant Major Kenneth R. Weast, was the key factor in the safe and successful road marches to Bremerhaven and Rotterdam. More than 300 vehicles drove over 600 km in some of the most hazardous winter road conditions Germany had experienced in years.

The aircraft of 1-1 Cavalry (CAV), 2-1 and 3-1 Attack Helicopter Battalions, Task Force Phoenix (TFP), and 9-1 Aviation Support Battalion deployed to Rotterdam from 29 November to 5 December. Except for weather, there was nothing to inhibit their safe and timely arrival at Valkenburg Air Base and the port facilities of Rotterdam.The decision to ship our equipment from Rotterdam turned out to be a very pleasant experience for the Iron Eagle Brigade. Many of the members were visiting our North Atlantic Treaty Organization ally for the first time. The Dutch people and soldiers we encountered went out of their way to make us feel welcome, supported, and secure. The Dutch authorities were extremely helpful in every respect, assisting in what they termed, "Deforger."

Mess and accommodations were provided at Valkenburg for the soldiers assigned to prepare the aircraft for loading onto ships. Each day these personnel would bus from Valkenburg to the port, put in a 14-hour day, and then bus back for a great meal and a well-deserved night's rest in the Valkenburg gymnasium. The port was really a round-the-clock operation that appeared frenzied on the surface but was, in reality, a coordinated and synchronized effort. The soldiers at dockside from various transportation units provided their expertise and support, ensuring the success of the brigade's loadup and deployment. Although the trip from Katterbach to Rotterdam encompassed only 7 days, it was an additional 3 weeks before all of the brigade's aircraft and vehicles actually were placed aboard ship and en route to the Kuwaiti Theater of Operations.

Back in Katterbach, the brigade and battalion commanders continued to observe the military and political situation. Also they prepared their units for deployment and follow-on employment. Even with all of the various lessons learned, there were always activities to prepare for and carry out. The brigade would have to go through a preparation for overseas movement. This process allowed all of the brigade's soldiers and their families the chance to review finances and medical records; get immunizations; make wills and powers of attorney; and otherwise take care of critical business before departure. It was a chance to educate those family members who were not already involved in the mundane affairs of their spouse. The Iron Eagle Brigade's goal was to have every soldier's family comfortable in the knowledge of what to do and how to take care of business in the absence of its servicemember.

After the brigade's departure, the role of the family guide and advisor fell upon the various battalions' family support groups. These organizations were composed of spouses and families left in Germany. They provided a vital link to all of the family members with their spouses. The wives of commanders and senior NCOs formed a dedicated and selfless nucleus of a tight-knit and efficient operation. The operation was designed to lessen tension, defuse rumors, and bring the far-flung elements of the command into a united and motivated group. The value of such an organization was priceless, intangible, and a combat-multiplier. Providing security and assistance to every family member left in Germany allowed the soldiers of the

A UH-60 Black Hawk on short final approach to Dammam Port, December 1990.

4th Brigade to concentrate on the business at hand—the freeing of Kuwait.

The aircraft and vehicles were loaded; milvans and connexes were stuffed and picked up by commercial and military carriers; training, briefings, and bag-packing were complete. All that remained for this operationwas to organize the advanced and quartering parties, and await determination of the sequence of deployment to the Kuwaiti Theater of Operations.

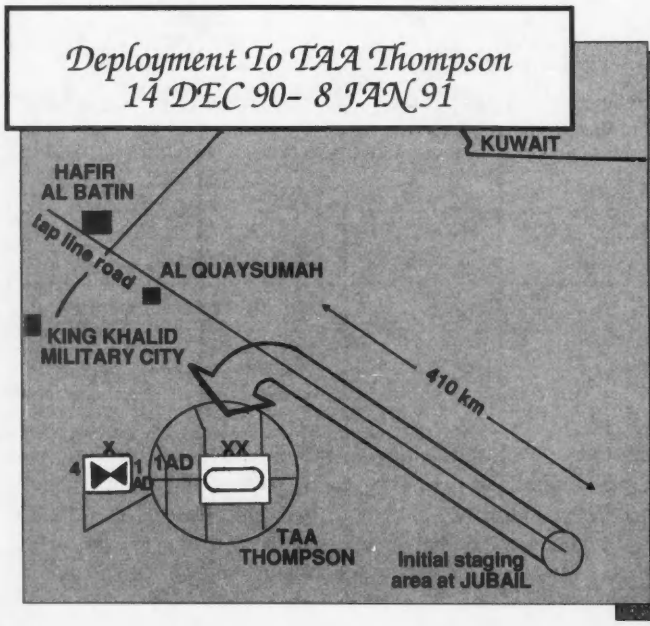
From Jubail to TAA Thompson: An Aviation Brigade Goes to War

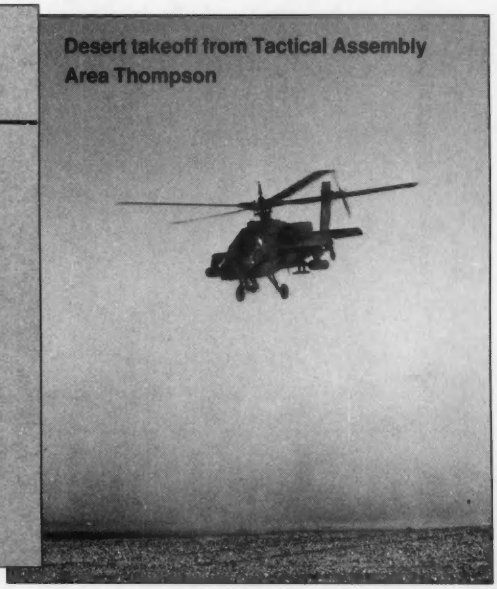
The 4th Brigade's aircraft and vehicles were safely at the ports of Rotterdam and Bremerhaven, awaiting shipment to Saudi Arabia. Plans to phase its personnel into Operation Desert Shield began to take shape. The advanced and quartering parties would need to accomplish a number of critical tasks to pave the way for the brigade to enter the Kuwaiti Theater of Operations.

The lst Armored Division's advanced party was under the command of Brigadier General (BG) John Hendrix, the Assistant Division Commander, Maneuver (ADC-M). It arrived in country on 14 December 1990 along with five personnel and two vehicles from the 4th Brigade. This group quickly left the initial staging area (ISA) at the port of Jubail for the desert.

VII Corps had given the division a large "goose egg" tactical assembly area (TAA), about 20 miles south of Quaysumah, named Thompson. The advanced party capitalized on a leader's reconnaissance conducted by the Commanding General (CG), Major General (MG) Ronald H. Griffith, some weeks before. It quickly surveyed the major subordinate commands' sectors and established contact with the VII Corps' Logistics Base Alpha. This huge entity incorporated all classes of supply, maintenance units, transportation, and administrative resources. VII Corps' 2d U.S. Army Corps Support Command became the focal point for acquiring tentage, POL, food, and water in the nascent arena.

As the advanced party prepared the division's sector, the first quartering parties arrived on 15 December and settled uneasily into a blessedly short stay in the ISA. Despite the best efforts of the ISA's management, it soon became overcrowded and unsanitary. Thousands of soldiers moved into whatever spaces they




Desert takeoff from Tactical Assembly Area Thompson

could find to live until word came to move to the desert. The experiences of the ISA hardened the troops and made them eager to occupy their places in the Saudi wilderness.

The 4th Brigade's quartering party arrived at TAA Thompson on 22 December, just in time to settle in for Christmas. Among the first tasks for preparing the desert for the main body's arrival were securing the sector; dividing the brigade area into sufficient and workable terrain for its 125 aircraft, 250-plus wheeled vehicles, and 40 Bradley fighting vehicles; and establishing sites for a division forward arming and refueling point (FARP) and ammunition holding area.

Perhaps the most challenging aspect of the brigade's occupation of the desert sector was finding, acquiring, and emplacing M-19 aluminum matting. These 4-foot by 4-foot sections, when pinned together, formed aircraft landing pads and maintenance areas. The 4th Brigade sought a proportionate share of the limited number of sets remaining free in theater; it was allocated just over 3,000 mats. The division engineer, Major (MAJ) John Brewer, determined that this number would allow the construction of a pad for each of the 36 AH-64 Apaches; the 6 OH-58D Kiowas, 12 FARP pads (4 each for the attack battalions and the division FARP); and 1 CH-47 Chinook resupply pad. While falling well short of providing sufficient pads for all the brigade's aircraft, these pads afforded a partial fix. When combined with extensive dust control measures, the pods helped to reduce the amount of blowing sand and dust around the delicate turbine engines.

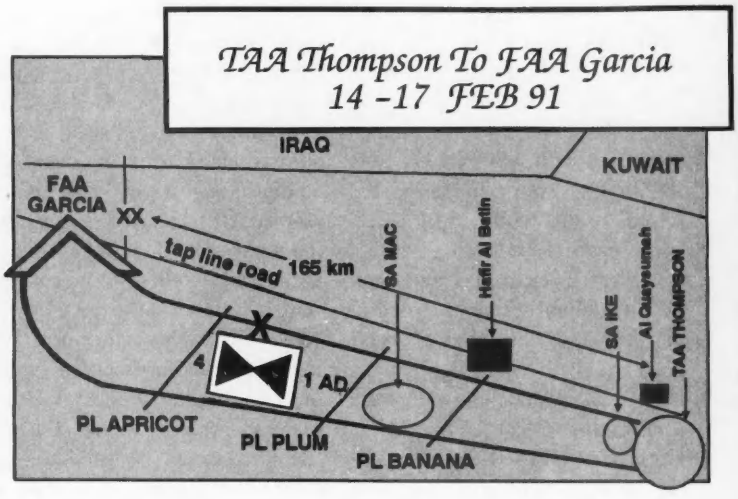
Also essential was the acquisition of Saudi-constructed, prefabricated showers, latrines, and wash basins. The division allocated these on the basis of one shower and latrine for every 50 soldiers, one set of wash basins (8-place) for every 80 soldiers. As the items arrived on the trailers of seemingly endless convoys of semi's and cargo trucks, every brigade executive officer or S-4 in theater queued up for at least his unit's daily allotment. In the long run, each brigade received a reasonable amount of "soldier support" items, allowing them to pursue other problems such as finding a source of water to fill those showers.

Meanwhile, the last elements of the 4th Brigade still in Katterbach, Germany, loaded onto buses on 21 December to make the short, first leg of their journey to Nurnburg Flughafen (airport), the aerial port of embarkation. Carrying weapons, chemical protective masks, load-bearing equipment, rucksacks, and one A bag, the main body departed Nurnburg on civilian-chartered aircraft. Once the soldiers of 1-1 CAV, 2-1 and 3-1 Attack Helicopter Battalions, and TFP arrived at King Fahd Airport, they committed themselves to getting the brigade ready for combat.

The AH-64s, UH-60 Black Hawks, OH-58Cs and Ds, AH-1 Cobras, and UH-1 Hueys of each unit trickled into the ports of Jubail and Dammam on four ships. The rest of the brigade's equipment arrived or was en route on 27 different ships. When the aircraft came off of the boats, eager teams from the battalions took possession. These teams began the tedious and labor-intensive steps of reassembling the helicopters; taping the rotor blades to protect against the tremendous erosion encountered because of sandy conditions; and conducting maintenance and flight operations. The men of 1-1 CAV, the "Black Hawk Squadron," quickly regrouped their assets and moved out to TAA Thompson. They became the first combat unit in VII Corps that was ready for action. Under the command of Lieutenant Colonel (LTC) William A. Reese, the squadron immediately took the lead in securing the sector and initiating training for combat operations.

The intent was to deploy the Iron Eagle aviation units to TAA Thompson as they became 100-percent ready. Moving into the desert as whole battalions unified them in both mission and sense of purpose; it precluded the possibilities of piecemeal, catch-as-catch can training. By the 31 December, the 4th Brigade had moved all of its assets, personnel, and equipment from Katterbach to TAA Thompson. There were no accidents, no incidents, and nothing left behind except for our loved ones at home. As the end of the year rapidly approached, the men and women of the Iron Eagle Brigade had safely deployed to the KTO. They remained motivated to accomplish their missions and to get the job done.

From TAA Thompson to G-Day: An Aviation Brigade Goes to War



As most of the world celebrated the start of 1991, the servicemen and women of Desert Shield examined the monumental changes they had come through and the extraordinary challenges confronting them. For the XVIII Airborne Corps, it had been a long and trying experience—all the way from the jungles and cities of Panama to the desert and desolation of Saudi Arabia. For the VII Corps units based in Europe, the tests were still coming at a fast and furious pace. The transition from USAREUR to the KTO was as startling as a bucket of ice-cold water in the face. Our thinking was rapidly forced to adjust from the urban and rolling green terrain of Germany, to the predominently flat, arid, and sandy conditions of Saudi Arabia, Kuwait, and Iraq. This adjustment was not an insurmountable problem, but one to which we gave careful thought.

For the 4th Brigade, the New Year began with 100 percent of the 125 aircraft, 250-plus vehicles, and 1,800-plus soldiers deployed in the KTO at TAA Thompson. The journey for 1-1 CAV, 2-1 and 3-1 Attack Helicopter Battalions, and TFP had been a long, tiring, and fascinating experience. Many of the officers and NCOs had studied scenarios in which U.S. forces would have to deploy long distances in a short period to fulfill obligations as the free world's champion. Few believed that they would actually get the chance to conduct an operation the size of Desert Shield.

It's one thing to fly the 82d someplace, drop them out of C-141 Starlifters, and ask them to fight briefly and furiously. Of course, this is a gross oversimplification of the magnificent job they and the rest of the Rapid Deployment Force have done over the past few years. But who could possibly envision really moving not one, but two armored divisions (plus much more) from Europe to Southwest Asia? We were there to see it with our own eyes, and to participate in the joys, sorrows, trials, and tribulations that went along with it. Now that we were there, the mission became crystal clear.

The 4th Brigade was the first full-up divisional aviation brigade in USAREUR. As such, it found itself as the first combat-ready VII Corps brigade of any type deployed in the Saudi desert. By 1 January, all of the brigade was actively involved in day and night desert flight training. The pilots and maintenance personnel of each unit, as well as the CAV troopers in their Bradleys and their high mobility, multipurpose wheeled vehicles (HMMWVs), found that all of those lessons learned by the XVIII Airborne Corps as far as training in Saudi Arabia were true. Sand got in ev-

erything. Flying at night with goggles was a real challenge. Targets showed up very clearly at night on the Apache and Bradley infrared systems.

As time passed, and the UN-imposed 15 January deadline approached, chances to train were many and geared for realism. The two attack battalions, 2-1 and 3-1, were under the command of LTCs John Ward and William Hatch, respectively. The battalions practiced frequent night company- and battalion-level battle drills. In addition, the sudden and pleasant availability of HELLFIRE missiles offered the Apache crews the chance to fire a real missile—a first experience for all but a few of the pilots and gunners. The hours in the combat mission simulator (CMS) in Illesheim were spent firing hundreds of computerized HELLFIRE missiles at hundreds of computerized T-72s, BMP infantry combat vehicles, and ZSU-23-4s. These hours would soon be replaced by the chance to test the crews' skills against real targets—Saddam Hussein's Republican Guards and other motorized and tank divisions.

Throughout the period leading up to the start of Operation Desert Storm, members of the Iron Eagle Brigade flew over 4,500 hours without an accident. They fired 52 HELLFIRE missiles and enough 2.75-inch rockets and 30mm high explosives to validate their confidence in the Apache and its systems. The AH-ls of the 1-1 CAV also honed their skills with TOWs, rockets, and 20mm. Bradleys crews zeroed, fired, and practiced screen missions, area and route recons. The only casualty during this ramp-up to combat was a soldier who suffered a fractured hand from a fall.

At about 0200 hours, in the darkness on 17 January, a "guidons" call came over the division command net. The call informed the first air defense units of the start of the war against Iraq. As the President's Press Secretary Marlin Fitzwater so succinctly stated, "The liberation of Kuwait [had] begun."

It quickly became obvious to those who had not been privy to the "big picture" that a period of aerial bombardment would precede any ground war the 4th Brigade might take part in. Like the rest of the world, we listened, glued to our radios with Cable News Network and other broadcasts of the first raids on Baghdad. Each soldier reflected quietly on things to come. Each wondered how he or she would fare, how we would perform. And many prayed, not only for us, but also for our brave and gallant joint and combined forces pilots who were privileged to be the first to give Saddam a bit of what he so richly deserved. We were embarking on a magnificent undertaking—the liberation of a nation. We would be participating, many of our soldiers for the first time, in what we had trained so long and so hard for. The only question that remained in our minds was, "When?"

In the intervening period between 17 January and G-Day, 24 February, we continued to train, increased our vigilance to even higher levels, and watched and waited for word of our initiation by fire. As time passed, pilots and crew chiefs, cooks and heavy expanded mobility tactical truck (HEMMT) drivers, commanders and generator mechanics, speculated on G-Day. We knew we were ready and had been for some time. We itched for a mission, any mission.

Finally, word came that the division, in conjunction with the 3d Armored Division, would move from TAA Thompson to Forward Assembly Area (FAA) Garcia, some 130 km to the northwest. This would be a practice of the Vll Corps' movement into Iraq. The significance of this preliminary operation was not lost on anyone. Not since World War II had any U.S. commander maneuvered two armored divisions online. We were truly becoming a part of history. As 24 February approached, we could only wonder what role we would have and what the history books might say about Iron Eagle Brigade's performance and Desert Storm.

Loading 30mm rounds.

From Garcia to Kuwait: An Aviation Brigade Enters the War

After moving with the rest of the lst Armored Division into FAAs by 16 February, the 4th Brigade settled in. It completed final preparations for what everyone knew was soon to happen—commencement of the ground campaign. The brigade would start Desert Storm with one of its two attack battalions, 2-1 (Strike Eagle), under operational control (OPCON) of the 2d Armored Cavalry Regiment (ACR). LTC John Ward moved his battalion well forward of the division's frontline trace, colocating with the Regimental Support Squadron. The Strike Eagle Battalion was incorporated into all aspects of the ACR's plans, and provided it with the ability to maximize its combat power 24 hours a day.

The 4th Brigade's major challenge at the outset appeared to be the same as that for the division—the logistical support required for sustained, mid- to high-intensity combat operations. The importance of the personnel entrusted to provide fuel, ammunition, and maintenance cannot be overstated.

Because of the distances involved and the tactical scenario envisioned, the brigade required a multifaceted and flexible support plan. The ammunition hauling capability of a typical Apache battalion had to be enhanced to carry the requisite HELLFIRE missiles, 2.75-inch rockets, and 30mm rounds required. VII Corps provided six additional cargo HEMMTs, as well as six more tanker HEMMTs per attack battalion. This move was instrumental in the success of future operations of the brigade.

Well in advance of G-Day, brigade and battalion XOs , S4s, and III/V (POL and ammunition) platoon leaders wargamed the various options that were available for supporting the brigade's aircraft and vehicles. An ambitious, but incredibly simple, concept arose. The brigade would plan for several FARP locations throughout the division's zone of advance.

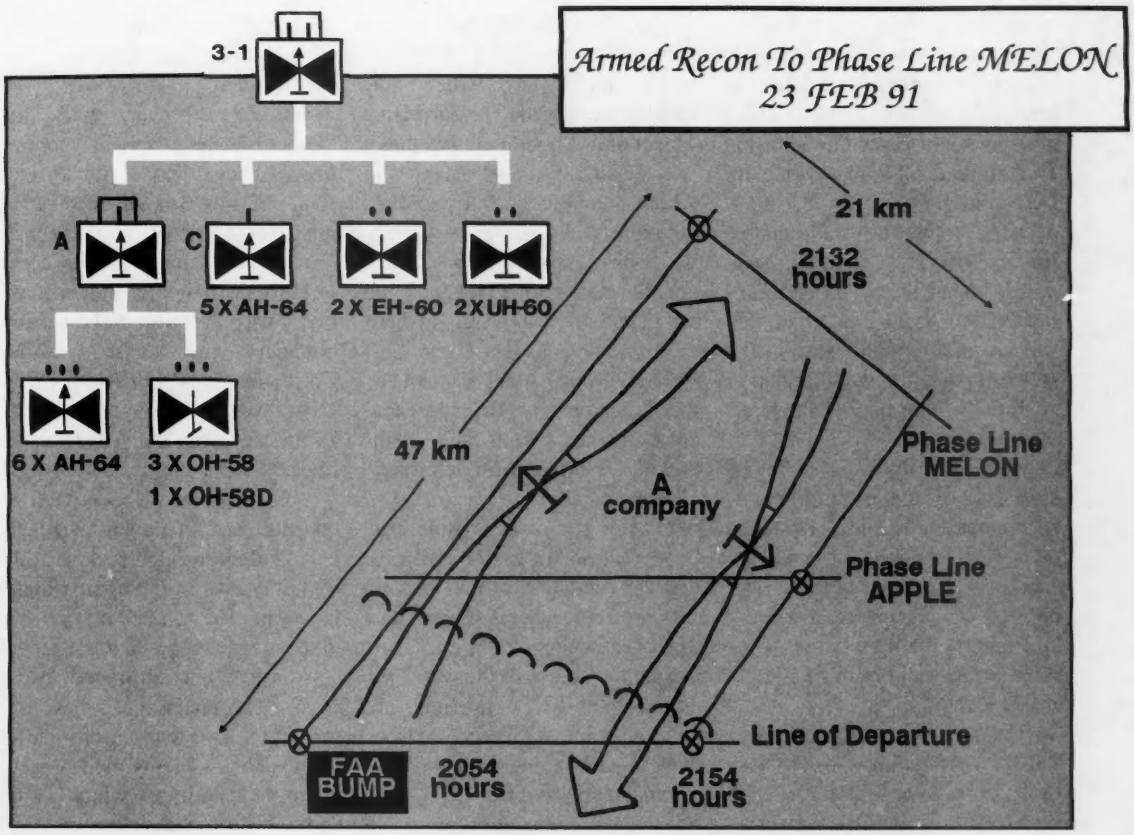
LTC Ken Travis' TFP would be on call to provide UH-60 support to slingload 25, 500-gallon blivets of JET-A fuel, all day and all night. The 3-1 Attack Helicopter Battalion's (Night Eagle) III/V assets were subdivided into two teams—FARP Heavy and FARP Light. These assets were under OPCON of the battalion XO, MAJ(P) Jim Shivers.

Desert takeoff from Tactical Assembly Area Thompson, January 1991.

Ultimately, Shivers' teams rolled across the line of departure (LD) with 30,000 gallons of JET-A fuel and ammunition. Also included in this organization were the crewchiefs; medical personnel; air defense artillery (ADA) Stinger teams; nuclear, biological, and chemical decontamination teams; and armament technicians whose services might be required. This mobile and well-trained group had to prepare for any contingency to include self-defense. It was probably one of the most motivated and positive de facto organizations operating during Desert Storm.

The Brigade began to take part in Desert Storm's ground phase on G-1 (23 February) at 2054 hours. The brigade commander and Night Eagle's fighters led an Apache armed reconnaissance mission. The purpose of the mission was to provide real-time intelligence on the division's proposed avenue of approach from the LD, the Saudi-Iraqi border, to Phase Line (PL) Melon, a depth of 50 km.

During the mission no resistance was encountered. Aircraft did pass over a few dug-in infantry and scout elements, but they did not shoot. After crossing PL



Apple, crews began to pick up strobes on their radar warning receivers (AN/APR 39s). Near PL Melon, enemy artillery started to pop illumination rounds to the north in an obvious, but unsuccessful attempt to locate the intruders. Although the reconnaissance mission failed to bring about Iron Eagle's first live-fire engagement, it was a total success in many respects. It validated the G-2's estimate and provided key intelligence on the division's zone. It also provided an excellent chance to glimpse across the forward line of own troops (FLOT) with the sophisticated night vision systems and forward looking infrared radar.

These systems would enable the Apaches to "own the Iraqi night." What the pilots and gunners of the Night Eagle battalion saw warmed their hearts—the meteorological and illumination conditions were perfect for hunting Iraqi armor.

When the division advanced across the LD the next morning, it encountered little initial resistance (as verified the previous evening) and covered ground quickly. The division was having great success in defeating the Iraqi defenses located in the vicinity of PL Grape and PL Colorado.

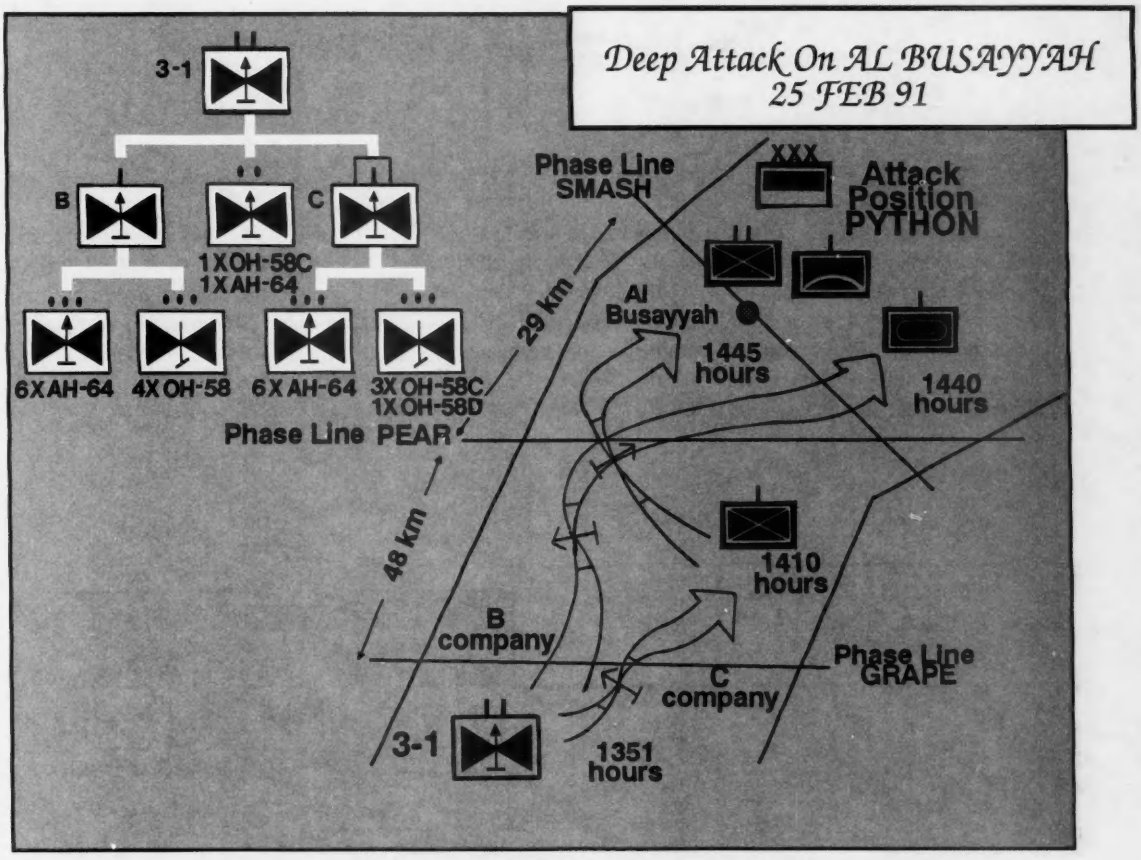
The division commander, MG Ronald H. Griffith, met the brigade commander in the FARP at FAA Shake to discuss the feasibility of hitting the division's next expected resistance some 44 km forward of the current FLOT. The enemy was a suspected Corps-level logistical base at the Iraqi complex of Al Busayyah. In a daylight attack, this operation would employ two Apache companies (Night Eagle) in what was believed to be a low-risk environment. The CG approved the concept and gave the order to launch.

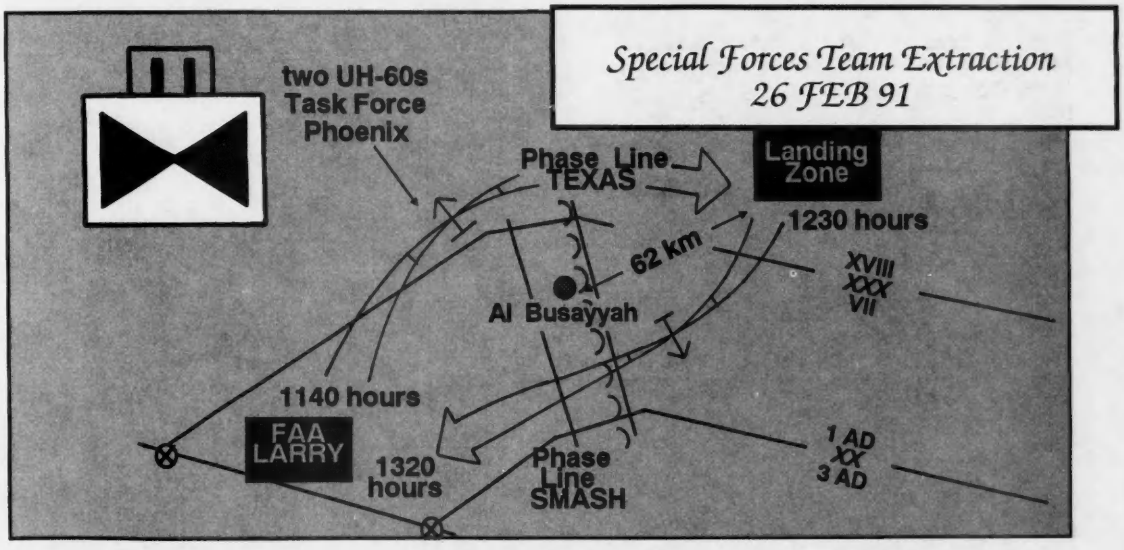
During this attack , the 3-1 pilots encountered only minimal resistance in the form of a few T-55 tanks and BMPs, which they quickly destroyed. The surprising aspect of this operation was that it was the first of many instances in which hundreds of Iraqi soldiers ran out of their bunkers to surrender upon sighting Apaches. Without the means to hold them, the aeroscout pilots hovered to herd the Iraqis into a tight circle until the lead ground scout elements of the division's lst Brigade came onto the scene and took them prisoner. No Night Eagle aircraft were damaged.

One of the success stories of Desert Storm for the 4th Brigade was the validation of the consolidation of our general support and Black Hawk companies into TFP. During the course of the war, TFP took charge of all medium lift missions, Special Forces extractions, FARP emplacements, and command and control (C^2) missions. This organization provided the brigade with great flexibility; for example, during the division's fame during pursuit of the Republican Guards, the CG gave 4th Brigade the mission to "mop-up" and clear Al Busayyah. Augmented by an infantry and then an engineer company to destroy all enemy ammunition and equipment, TFP took charge and provided all necessary C^2 to coordinate and successfully complete the mission. This freed the brigade headquarters to continue to fight the Apaches 60 km further forward.

On 26 February, while the "Old Ironsides" Division continued its relentless advance into Iraq, the 4th Brigade received a mission to extract two Special Forces teams that had been compromised. Their last known location was across VII Corps' boundary with XVIII Airborne Corps, over 130 km from TFP's UH-60 staging area, and about 80 kilometers forward of friendly lines.

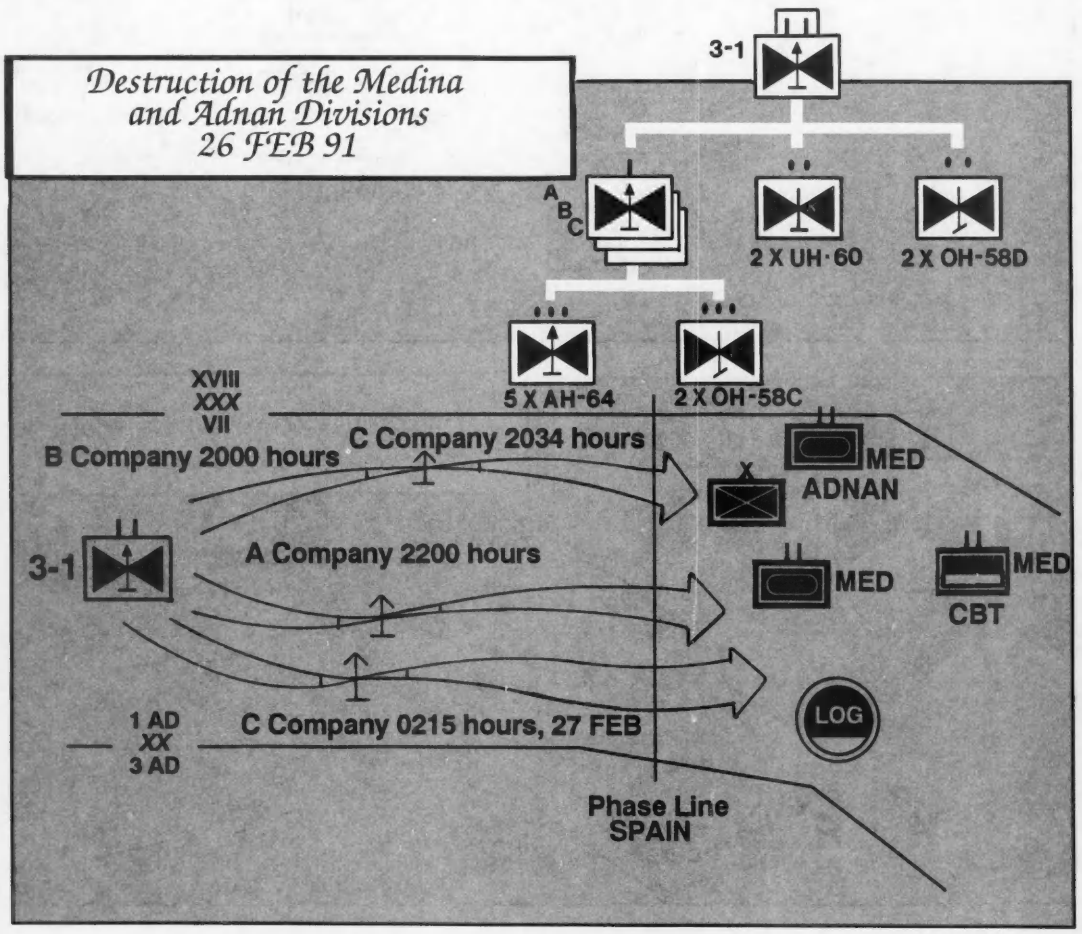
Accepting the mission without question, two of Phoenix's Black Hawks flew through poor visibility conditions to the approximate location. They flew 1/4 to 1/2 mile in blowing sand. After a frustrating, but ultimately successful reconnaissance, they extracted the two teams from under the nose of an enemy mechanized infantry battalion, which was within sight of the pickup.


Deep Attack On AL BUSAYYAH
25 FEB 91
3-1
B
C
1XOH-58C
1XAH-64
6XAH-64
4XOH-58
6XAH-64
3XOH-58C
1XOH-58D
Phase Line SMASH
XXX
Attack Position PYTHON
29 km
Al Busayyah
1445 hours
1440 hours
Phase Line PEAR
48 km
1410 hours
B company
C company
Phase Line GRAPE
3-1
1351 hours


Special Forces Team Extraction
26 FEB 91
two UH-60s
Task Force Phoenix
Phase Line TEXAS
Landing Zone
1230 hours
62 km
XVIII
XXX
VII
Al Busayyah
1140 hours
FAA LARRY
1320 hours
Phase Line SMASH
1 AD
XX
3 AD

The Iron Eagle Brigade's third battle was perhaps the most critical of the war for our Apaches. The Night Eagle battalion attacked the Medina and Adnan Divisions, as well as other Republican Guards remnants moving north to escape the 3d Armored Division's advance. The Apaches attacked throughout the night of 26 February, in four separate sorties. The results achieved by the Apaches in these sorties were gratifying.

Most of the battalion's HELLFIRE shots were in the 4 to 6 km range; the battalion used both autonomous (lasers self-designated) and remote laser designation (OH-58Ds from TFP). (The video tapes of this action clearly show



the strong Republican Guards buckling under the fires of the unseen Apaches as their tanks were destroyed, piecemeal.) Again, no aircraft or crews were damaged or injured.

Because of the fast pace and intricacy of this night-long engagement, C^2 required special attention. Consequently, the brigade commander fought the battle in a C^2 UH-60 and the battalion commander from his AH-64.

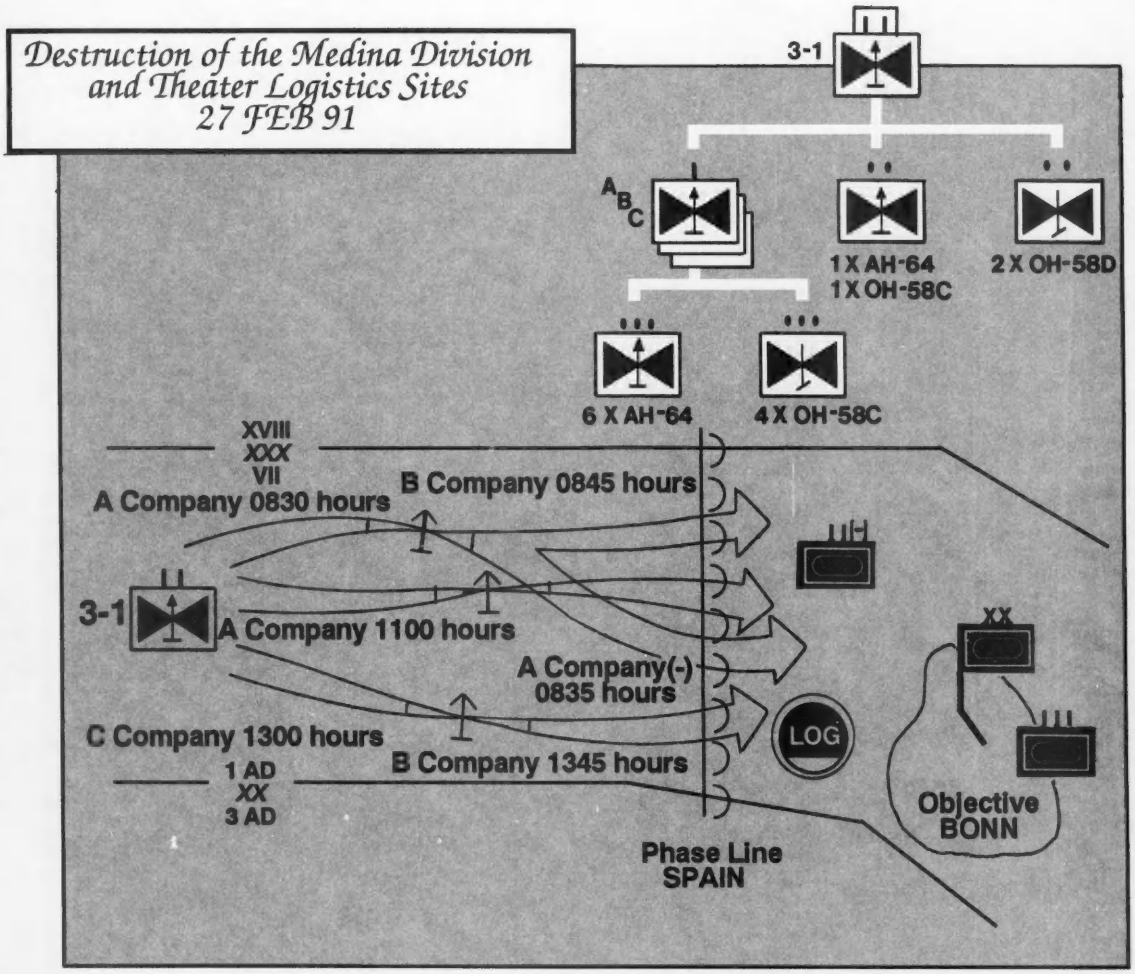
The brigade S-3, MAJ Bob Carter, found himself alongside the division tactical air control (TAC) in an HMMWV equipped with every radio he could get his hands on. The Night Eagle S-3, Captain(P) John Kelly, was in a C^2 UH-60 that 3-1 specially configured for this purpose. This foresight and equipment array resulted in a well-controlled and well-orchestrated battle with the capability to instantaneously shift forces and reevaluation of the scenario.

The distance from the FARP to the battlefields was more than 70 km until Team Heavy established a forward FARP around 2400 hours. Throughout the past 24 hours, Shivers and company had pursued not only the rapidly advancing aircraft of their battalion, but also the ever elusive sources of JET-A sporadically found in the Corps' zone.

Final maintenace operational checks at Dammam.

The 4th Brigade fought its fourth battle just forward of the division's frontline trace. The order from the Division Commander, MG Griffith, on the morning of 27 February was loud and clear: "I don't want a single minute to go by without Apaches in front of the Division." The CG could smell the imminent destruction of the Republican Guards.

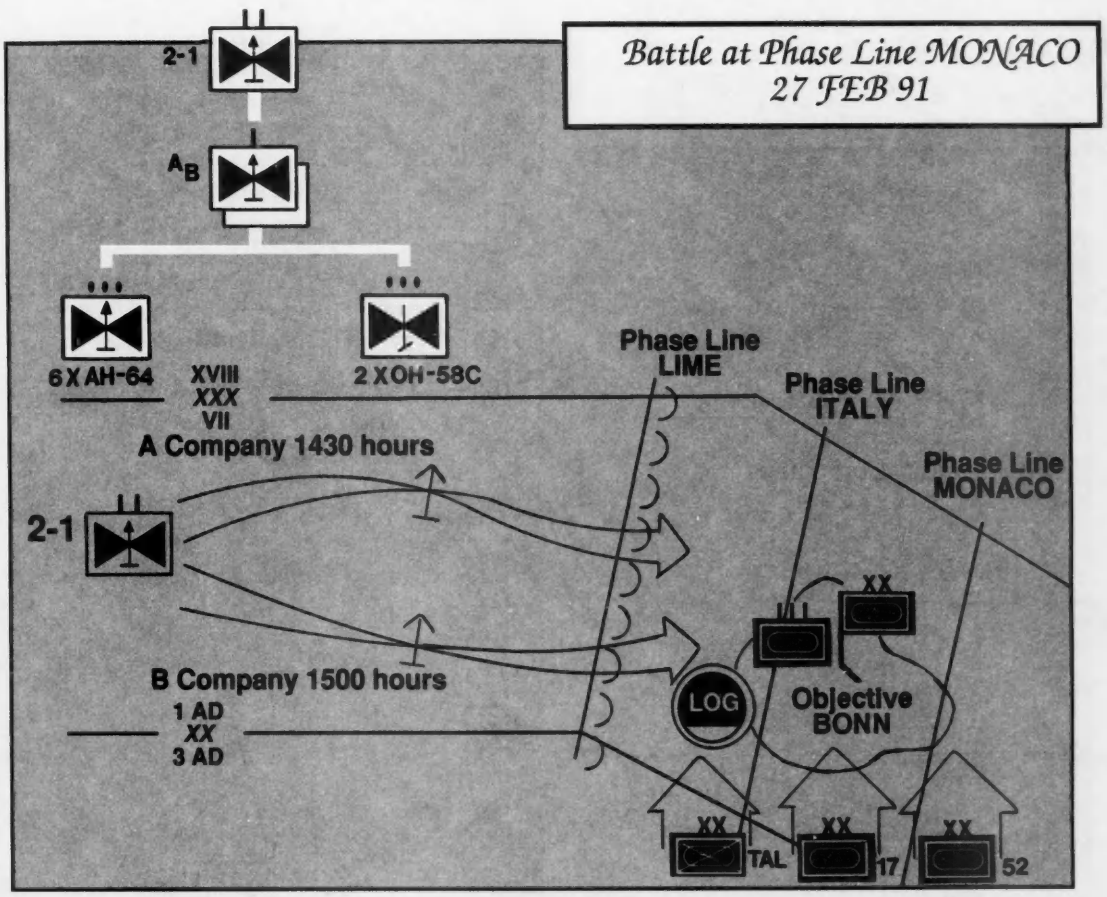
This battle started at PL Spain: a blacktop road and a nearby pipeline that clearly marked the frontline trace. The brigade commander was in the first aircraft on the LD that day along with his TAC party: U.S. Air Force CPT Rob Dooley as an airborne "HELIFAC" in another OH-58C. From 0830 until 1630 hours that



day, the 4th Brigade had Apaches out front.

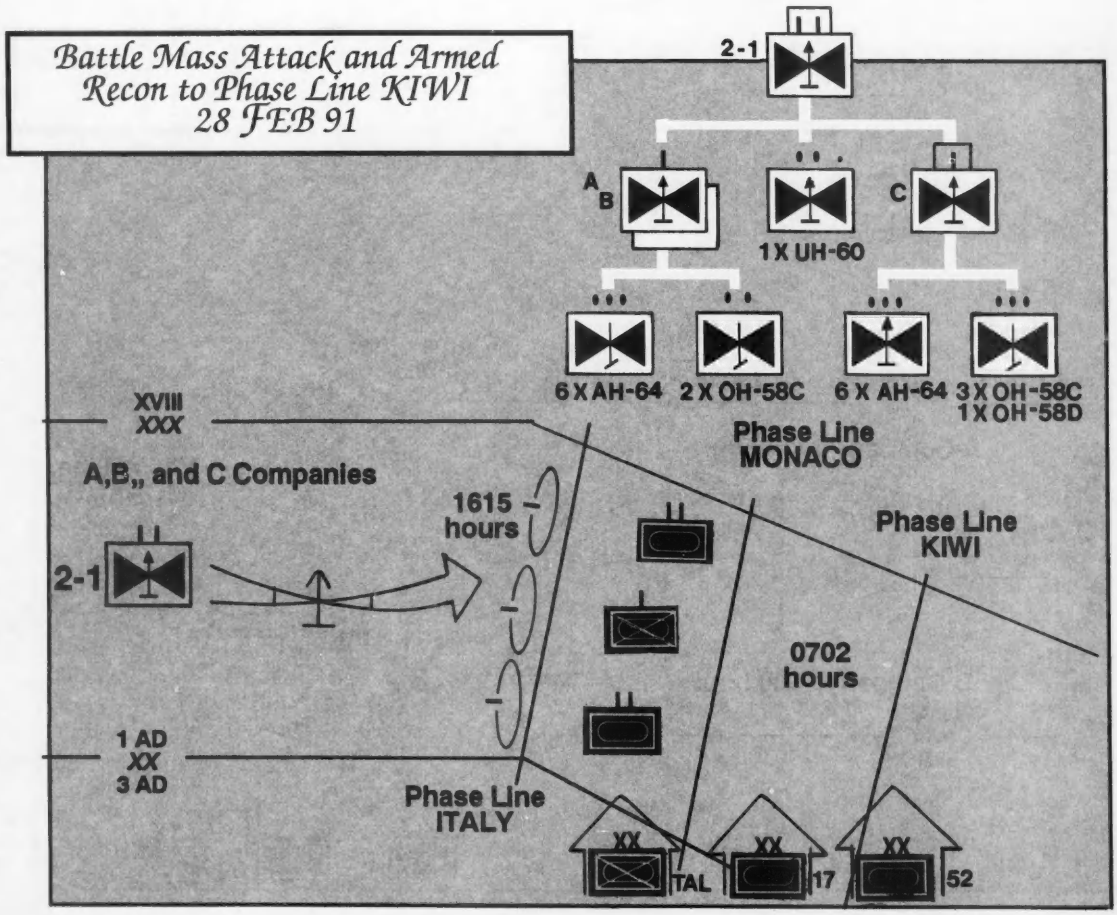
Fortunately, LTC Ward's Strike Eagle Battalion, 2-1, had returned to the brigade at 1430 hours on 27 February from their OPCON status with the 2d ACR. While with the 2d ACR, 2-1 launched and completed three successful deep attack missions. Now that 2-1 was back with the Iron Eagle Brigade, the division had a fresh attack battalion to take over the fight, LTC Hatch's 3-1, which had been fighting continuously since 2000 hours the previous night. Upon entering the fray, 2-1 took the battle all the way to PL Monaco.

With the CG's guidance came an additional twist to the C^2 of the Apaches now working in the lead brigades' zones. The brigade and battalion commanders commanded and controlled the operation while airborne and on the division command net—in constant touch with the ADC-M, BG John Hendrix. The ADC-M conducted the fight by shifting Apaches to decisively attack the enemy's strong points. The brigade or battalion commander worked forward, cycling Apache companies into a phased attack 3 to 5 km ahead of the division's frontage. The brigade S-3 stayed with the division TAC, coordinating with the brigade XO, located in the Tactical Operations Center (TOC), for additional missions and support requirements.



The brigade's fifth and final battle took place early on 28 February—the day that offensive operations ceased. MG Griffith wanted to push the division to the Kuwaiti border before 0800. He started the operation with a massive Field Artillery (FA) prep from 0530 to 0615. Immediately upon confirmation of "rounds complete," BG Hendrix ordered the Apaches of Strike Eagle to conduct a battalion-sized mass attack to clear the division's zone of advance all the way to PL KIWI in Kuwait.

The C^2 for this operation, which went 25 km across the FLOT, had the battalion commander forward in an AH-64, and his S-3 airborne at the FLOT in



4th (Iron Eagle) Brigade
1st Armored Division

flying hours	1-1	2-1	3-1	TFP	TOTAL
AH-64		237	252		489
AH-1	84				84
OH-58A/C	224	163	200		587
OH-58D				120	120
UH-1				62	62
UH-60		40	42	246	328
EH-60				52	52
ammunition					
HELLFIRE missile		49	144		193
2.75-inch rocket	22	691	542		1255
30mm gun		18,088	13,094		31,182
20mm gun	100				100
TOW missile (air)	1				1

contact with the brigade S-3 in another C^2 aircraft. The division's short, violent attack resulted in the division's destroying numerous enemy tanks and vehicles before action stopped at 0730 hours. The division then closed its lead elements on the border.

The 4th Brigade as a fighting force executed its variety of missions with great success. We understood and met the CG's intent in every battle. During the lst Armored Division's 89 hours of combat, we flew 1,722 hours and fired l93 HELLFIRE missiles, 31,l82 30mm rounds, and 1,255 2.75-inch rockets. Only AH-ls seemed to suffer from the effects of the desert flying without the improved particle separator.

The Iron Eagle Brigade found itself an eager participant in every battle fought by the lst Armored Division—in poor weather, on short notice, and at all hours of the day and night. The brigade's pilots were cool and collected under fire. The maintainers and supporters were constant and dependable. Our soldiers, regardless of their roles, were magnificent throughout Desert Shield/Desert Storm.

There are many reasons for 4th Brigade's accomplishments during the war. Certainly the air war guaranteed us air supremacy and reduced the enemy ADA to almost nothing. The economic blockade strangled the flow of key military supplies to Iraq. The

presence of a rapidly advancing and unrelenting armored division imposed an atmosphere of terror among the elite Republican Guards forces we faced. All of these factors, plus numerous others, combined to validate the Air-Land Battle doctrine, and allowed the division to execute its war plans throughout the offensive operations.

Specific aviation successes should be attributed to excellent peacetime training to include the CMS. We crammed as many Apache crews as time and space allowed into this simulator during the final weeks before deployment. Also, the brigade's pilots executed their battle drills and fought exactly as they had rehearsed in the CMS during stints at the Combat Maneuver Training Center at Hohenfels, Germany, and as part of Return of Forces to Germany 90, Centurion Shield. It was amazing to experience.

As an aviator who fought Cobras in Vietnam, my mind's eye expected to see a period of rapid improvement from the experience of the initial combat missions. This did not happen. From the first mission on, each aircrew and unit functioned in full synchronization. I attribute this to peacetime training and the great standoff range of the Apache. The Apache crews very quickly and methodically killed enemy formations in order of priority—tanks with HELLFIREs, BMPs with rockets and 30mm, and wheeled vehicles with 30mm.

The Black Hawk crews were right on target as well, acting as the brigade's lifeline for supplies, C^2 platforms, and flying special missions on request around the clock. While our OH-58Ds did not work with FA during Desert Storm, they provided the essential all-weather, day-night "eyes on" capability, including remote designation of HELLFIRE kills.

Our OH-5BC scouts were relentless, tireless, and ever present, performing as scouts have through the centuries—finding the enemy, fixing them, and showing the "guns" the path to engagement. Our Army should be proud of our aviators. All were calm, professional, and ultimately, deadly for the Iraqi forces.

A great measure of our success also can be attributed to the Aviation Branch. The aviation company and battalion commanders who entered combat for the first time were truly competent and tactically and technically qualified. The 4th Brigade commanders who fought in Desert Storm were able to clearly focus on aviation leadership skills during their careers because there is an Aviation Branch. Every one of these fine leaders executed their first battle with the proficiency of seasoned veterans—probably better.

Desert Storm also proved that we need to initiate some vital fixes to the Aviation Brigade structure to make us a more capable combined arms partner. First and foremost of these fixes is a real TOC that is capable of operating on the move. The lightning speed of this operation quickly showed the ineffectiveness of operating out of two borrowed Expando vans, one M109 van, and two HMMWVs. With commanders and S-3s in AH-64s, OH-58Cs, and UH-60s, it was a battle in itself just keeping C^2 working. Meanwhile, the division, in a fast pursuit of the Republican Guards fought from M577 tracks on the roll. Interestingly, the division felt that the M577 was not the solution for them and are recommending that the Army develop a viable TOC vehicle. We, in Aviation brigades, must get the same.

In a scenario as fast and furious as Desert Storm, the Aviation brigade commander must be airborne to accurately assess the tactical situatlon and to influence the battle. However, we do not currently have a suitable TAC post. A UH-60 equipped with a command console; multiple frequency modulated secure, ultra-high frequency, very high frequency secure, and high frequency radios; and extended range tanks (external stores support system) would be ideal. Each battalion and the brigade headquarters should have

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INSET ABOVE: AH-64 Apache aviator (3-1 attack battalion) trains with the M-43 mask.

RIGHT: An AH-64 is parked on an M-19 matting in the Tactical Assembly Area Thompson.

one of these aircraft. In addition, it would be a significant advantage to give one to the CG and ADC-M of each division. This war was fought using helicopters to control the battle—the next will be fought the same way.

The second critical area is that of aviation liaison officers (LNOs). Army Aviation has done a great job of convincing the maneuver community that they need aviation LNOs—every brigade in the division had an aviation LNO team, not to mention the division main checkpoint and TAC. Only two of these teams, consisting of an officer and senior NCO, and equipped with a vehicle and two radios, were actually funded by the Army. The rest of the personnel and equipment came "out of hide." The officers were removed from cockpits, and the radios came out of command vehicles. The next war and even the next significant training event will find us doing the same. The LNO idea works—we just need to make it less painful.

Finally, Desert Storms's rapid pace proved that aviation units will easily out run Class III/V support from other than organic organizations. If the 4th Brigade had not been augmented with additional HEMMT cargo vehicles and tankers, it could not have crossed the LD with enough ammunition or fuel to see it through the operation. Our logistical leaders and assets frantically, but professionally, provided our pilots with the resources they needed to wage this war. Good old METT-T (mission, enemy, troops, terrain, and time available) conspired to prevent the well-intentioned resupply plans of higher echelons from coming to fruition.

Every aviation battalion needs a more robust III/V slice. Logisticians must realize that the HEMMT is the ideal vehicle for this purpose—all aviators want is enough of them for sustained operations.

AVIATION PERSONNEL NOTES

Truths About Additional Skill Identifiers Personnel Assets

One of our major headaches (probably yours too) has been and continues to be the use of aviation-related school trained additional skill identifier (ASI) assets. The schoolhouse has trained an adequate number to foot the bill; yet, these highly skilled soldiers don't always go where they need to be. Our specific concern is ASI W5, OH-58D Kiowa qualification, and ASI Xl, AH-64 Apache maintenance. These soldiers are getting "in the gate" at your installation (or theater U.S. Total Army Personnel Command) but never arrive at your "doorstep."

So, we will provide you with information that, hopefully, will assist you in understanding ASIs and correcting some of the myths associated with ASI use. Please share this with your S-1 folks as they are the ones that "make it happen."

The following information pertaining to ASI personnel was extracted from Army Regulation (AR) 600-200, paragraph 3-13:

"a. *Utilization.* Mandatory utilization is required of school-trained ASI assets for the minimum service-remaining requirement. This is based on the length of the course (AR 614-200, para 4-6).

"(1) Commanders will establish procedures to insure that ASI qualified soldiers serve in the position for which they were requisitioned. Soldiers are properly utilized when serving against validated documented ASI positions in the ASI in which trained.

"(2) Commanders, who send soldiers on temporary duty (TDY) and return for ASI qualifications or receive ASI qualified soldiers against requisitions with ASI prerequisites, will use them in appropriate ASI positions.

"b. *Improperly utilized ASI personnel.* Soldiers not assigned in accordance with a above are malutilized and action will be taken to assign them to the appropriate ASI position.

"c. *Assignment.* An ASI is not a substitute for an MOS and will not represent the sole skill required for any position. Soldiers possessing ASI will be assigned and utilized to fill ASI requirements as often as personnel qualifications are needed."

Service-remaining requirements for military occupational specialty (MOS) and ASI training associated with AH-64 or the OH-58 Army Helicopter Improvement Program (AHIP) are listed in AR 614-200, paragraph 4-6j.

"j. Soldiers who receive MOS and ASI training associated with AH64 or the OH58D (AHIP) will incur a 36-month service remaining obligation.

"(1) Soldiers identified for training who decline to extend or reenlist to meet the 3-year service remaining requirement will be denied training and will be considered for reclassification.

"(2) Initial termers and soldiers with less than 4 years for pay are eligible for training and do not incur a service remaining requirement as a result of such training.

"(3) Soldiers with 17 or more years of active Federal service are ineligible for the training unless they apply and indicate a willingness to incur the 3-year service remaining requirement."

We hope this helps you. Remember, if you want and need a specific ASI, your requisition must be specific, e.g., 68N30W5 or 68F20W5. There are plenty in the system to go around and you get what you request. Incidently, your table(s) of organization and equipment or modification table of organization and equipment on your unit authorization document must also reflect that you are, in fact, authorized what you request. "Good luck." "Above the best."

Point of contact is SGM Morrill, DSN 558-5706 or commercial (205) 255-5706.

Personnel Tidbit

There are 155 ASIs authorized. In Fiscal Year 1991, 21,250 soldiers were scheduled for ASI training. Course length varies from 2 to 52 weeks.

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